MVC-FD97

SERVICE MANUAL

Level 2

Self Diagnosis Supported model

Ver 1.1 2001. 06

FD Mavica

InfoLITHIUM L SERIES

MEMORY STICK

US Model
Canadian Model
AEP Model
UK Model
E Model
Hong Kong Model
Australian Model
Korea Model
Japanese Model

This service manual contains information for Japanese model as well.

When the machine needs to be repaired, please refer to page 6 to discriminate the type of LCD.

On the FC-85 board

This service manual procides the information that is premised the circuit board replacement service and not intended repair inside the FC-85 board.
Therefore, schematic diagram, printed wiring board and electrical parts list of the FC-85 board is not shown.
The following pages are not shown.

FC-85 board

Schematic diagram ..... Page 4-15 to 4-38
Printed wiring board ..... Page 4-11 to 4-14
Electrical parts list ..... Page 6-11 to 6-18

The above-described information is shown in service manual Level 3.

SPECIFICATIONS

System

Image device
6.64 mm (1/2.7 type) color CCD

Lens
10× zoom lens
f = 6.0 – 60.0 mm (1/4 – 2 3/8 inches)
(39 – 390 mm (1 9/16 – 15 3/8 inches) when converted into a 35 mm still camera)
F = 2.8

Exposure control
Automatic exposure

White balance
Automatic, Indoor, Outdoor, One-push

Data system
Movie: MPEG
Still: JPEG, GIF (in TEXT mode, Clip Motion), TIFF
Audio with still image: MPEG (Monaural)

Recording medium
Floppy disk:
3.5 inch 2HD MS-DOS format (1.44 MB)
"Memory Stick"

Flash
Recommended recording distance:
0.6 m to 2.5 m (23 5/8 inches to 8 1/3 feet)

Input and Output connector

A/V OUT (MONO) (Monaural)
Minijack Video:
1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance: 2.2 kΩ

ACC jack
Minijack

USB jack
mini-B

LCD screen

LCD panel
TFT (Thin Film Transistor active matrix) drive

Total number of dots
123 200 (560×220) dots

Finder

LCD panel
TFT (Thin Film Transistor active matrix) drive

Total number of dots
180 000 (800×225) dots

– Continued on next page –

DIGITAL STILL CAMERA

SONY

General

Application
Sony battery pack NP-F330 (supplied)/F550

Power requirements
8.4 V

Power consumption (During shooting)
4.2 W (When using the LCD screen)
3.8 W (When using the finder)

Operating temperature
0°C to 40°C (32°F to 104°F)

Storage temperature
–20°C to +60°C (–4°F to +140°F)

Dimensions (Approx.)
127×124×184 mm (5×5×7 1/4 inches) (w/h/d)

Mass (Approx.)
990 g (2 lb 3 oz) (including NP-F330 battery pack, floppy disk/"Memory Stick" and lens cap, etc.)

Built-in microphone
Electret condenser microphone

Built-in speaker
Dynamic speaker

AC-L10A/L10B/L10C AC power adaptor

Power requirements
100 to 240 V AC, 50/60 Hz

Rated output voltage
DC 8.4 V, 1.5 A in operating mode

Operating temperature
0°C to 40°C (32°F to 104°F)

Storage temperature
–20°C to +60°C (–4°F to +140°F)

Dimensions (Approx.)
125×39×62 mm (5×1 9/16×2 1/2 inches) (w/h/d)

Mass (Approx.)
280 g (10 oz)

NP-F330 battery pack

Battery type
Lithium ion

Maximum output voltage
DC 8.4 V

Mean output voltage
DC 7.2 V

Capacity
5.0 Wh (700 mAh)

Operating temperature
0°C to 40°C (32°F to 104°F)

Dimensions (Approx.)
38.4×20.6×70.8 mm (1 9/16×13/16×2 7/8 inches) (w/h/d)

Mass (Approx.)
70 g (2 oz)

Accessories
AC-L10A/L10B/L10C AC power adaptor (1)
Power cord (mains lead) (1)
USB cable (1)
NP-F330 battery pack (1)
A/V connecting cable (1)
Shoulder strap (1)
Lens cap (1)
Lens cap strap (1)
CD-ROM (SPVD-004 USB Driver) (1)
Operating instructions (1)

Design and specifications are subject to change without notice.

• Floppy disk that can be used by the MVC-FD97

- Size : 3.5-inch
- Type : 2 HD
- Capacity : 1.44 MB
- Format : MS-DOS format (512 bytes × 18 sector) (FD can be formatted by the MVC-FD97)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270 ˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

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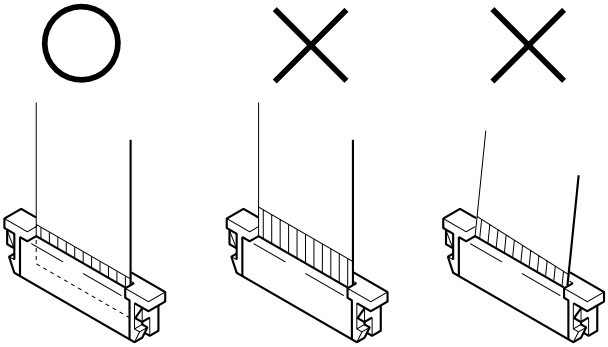
* The color reproduction frame is shown on page 169.

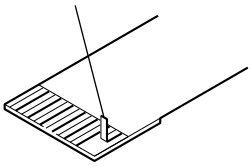
SERVICE NOTE

• NOTE FOR REPAIR

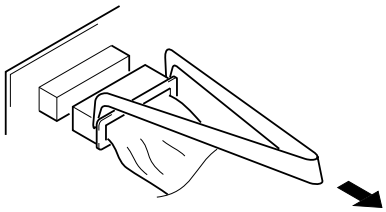
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



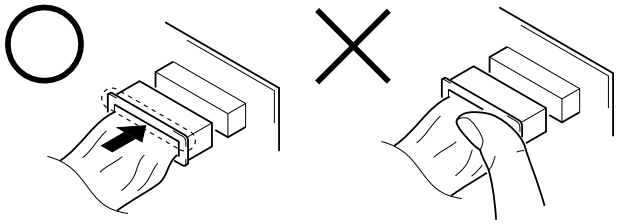
Cut and remove the part of gilt which comes off at the point. (Be careful or some pieces of gilt may be left inside)



When remove a connector, don't pull at wire of connector.
It is possible that a wire is snapped.



When installing a connector, don't press down at wire of connector.
It is possible that a wire is snapped.

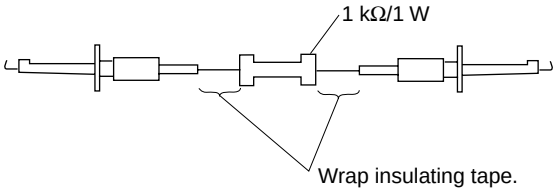


[Discharging of the FLASH unit's charging capacitor]

The charging capacitor of the FLASH unit is charged up to the maximum 300 V potential.
There is a danger of electric shock by this high voltage when the battery is handled by hand. The electric shock is caused by the charged voltage which is kept without discharging when the main power of the MVC-FD97 is simply turned off. Therefore, the remaining voltage must be discharged as described below.

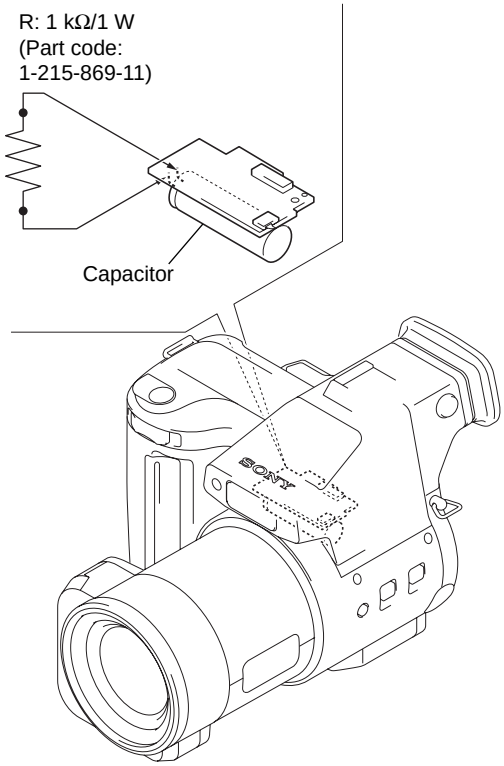
Preparing the Short Jig

To preparing the short jig. a small clip is attached to each end of a resistor of 1 kΩ /1 W (1-215-869-11).
Wrap insulating tape fully around the leads of the resistor to prevent electrical shock.



Discharging the Capacitor

Short-circuit between the positive and the negative terminals of charged capacitor with the short jig about 10 seconds.



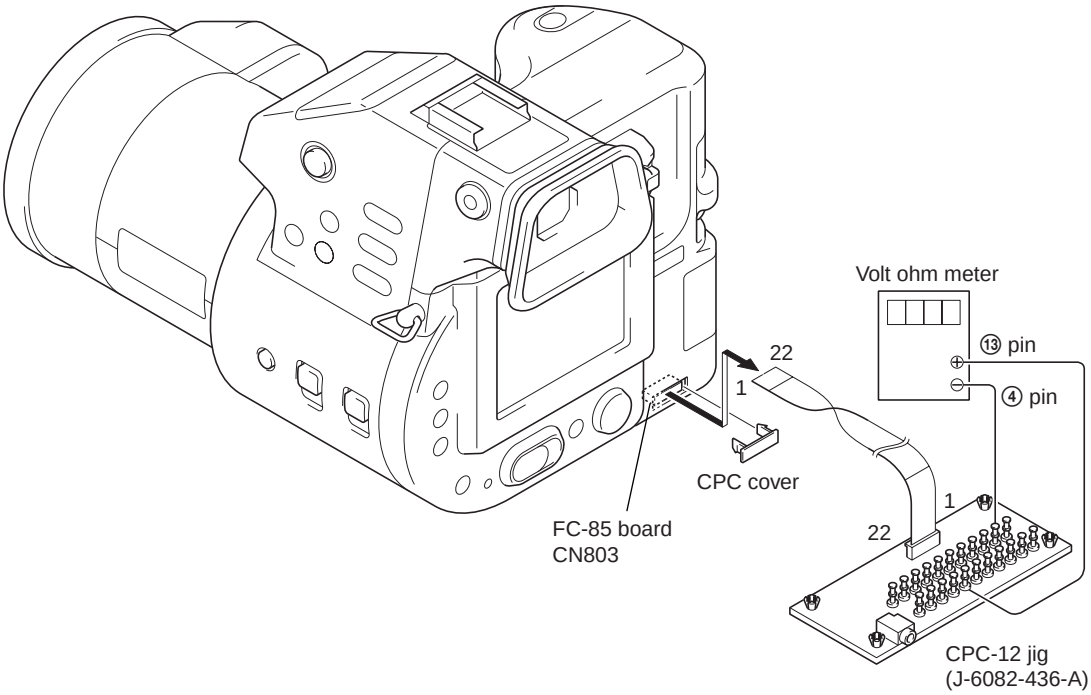
[LCD type check]

By measuring the resistor value between Pin ⑬ of CN803 and Pin ④ of CN803 on FC-85 board, the type of LCD can be discriminated.

Note: About PK-55 board and LCD module, discriminate LCD type on the machine, and replace the same type.

FC-85 board CN803

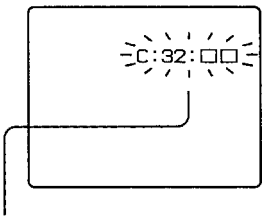
Resistor value	LCD type	PD board
4.7 kΩ	TYPE S	PK-55 (TYPE S)
47 kΩ	TYPE C	PK-55 (TYPE C)



[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digit display informs you of the camera current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

- C: □□: □□
  You can reverse the camera malfunction yourself.
- E: □□: □□
  Contact your Sony dealer or local authorized Sony service facility.

Note : The "Self-diagnosis" data is backed up by the coin lithiumbattery. The data will be lost and initialized when the coin lithium battery is removed.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:01	Change the disk and turn off the main power then back on.	Defective floppy disk.	DRIVE ERROR
C:13:01	Replace the floppy disk or "Memory Stick". Format the floppy disk or "Memory Stick" with the MVC-FD97.	• The type of floppy disk that cannot be used by this machine, is inserted. (Such as 2DD) • Data is damaged. • Unformatted disk or "Memory Stick" is inserted.	DISK ERROR MEMORY STICK ERROR
E:91:01	Checking of flash unit or replacement of flash unit	Abnormality when flash is being charged. *1	Flash LED Flash display Flashing at 3.2 Hz
E:61:00	Checking of lens drive circuit	When failed in the focus initialization.	—
E61:10			

Note : The error code is cleared if the battery is removed, except defective flash, unit.
*1: When the flash charging failed, Page: D, Address: 67, Data: 04 are written.
After repair, be sure to write Page: D, Address: 67, Data: 00.

[Power supplying Method]

Use the AC power adaptor (AC-L10A) when supplying the power to this set.

SECTION 1 GENERAL

This section is extracted from instruction manual.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

For the Customers in the U.S.A.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

If you have any questions about this product, you may call:
Sony Customer Information Center
1-800-222-SONY (7669)
The number below is for the FCC related matters only.

Regulatory Information

Declaration of Conformity

Trade Name:	SONY
Model No.:	MVC-FD97
Responsible Party:	Sony Electronics Inc.
Address:	1 Sony Drive, Park Ridge, NJ, 07656 USA
Telephone No.:	201-930-6972

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- —Reorient or relocate the receiving antenna.
- —Increase the separation between the equipment and receiver.
- —Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- —Consult the dealer or an experienced radio/TV technician for help.

The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the Customers in the U.S.A. and Canada

DISPOSAL OF LITHIUM ION BATTERY.
LITHIUM ION BATTERY.
DISPOSE OF PROPERLY.

You can return your unwanted lithium ion batteries to your nearest Sony Service Center or Factory Service Center.

Note:
In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)
For the Sony Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution:
Do not handle damaged or leaking lithium ion battery.

For the Customers in Canada

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

NOTICE FOR THE CUSTOMERS IN THE UNITED KINGDOM

A moulded plug complying with BS 1363 is fitted to this equipment for your safety and convenience.

Should the fuse in the plug supplied need to be replaced, a 5 AMP fuse approved by ASTA or BSI to BS 1362, (i.e. marked with ♡ or ◈ mark) must be used.

If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

For the Customers in Germany

Directive:EMC Directive 89/336/EEC.92/31/EEC
This equipment complies with the EMC regulations when used under the following circumstances:
- Residential area
- Business district
- Light-industry district

(This equipment complies with the EMC standard regulations EN55022 Class B.)

Attention

The electromagnetic fields at the specific frequencies may influence the picture and sound of this camera.

Be sure to read the following before using your camera

Operating instructions
Before operating the unit, please read this manual thoroughly, and retain it for future reference.
As you read through this manual, buttons and settings on the camera are shown in capital letters.
e.g. Press DISPLAY.

Trial recording
Before you record one-time events, you may want to make a trial recording to make sure that the camera is working correctly.

No compensation for contents of the recording
Contents of the recording cannot be compensated for if recording or playback is not made due to a malfunction of your camera or recording medium, etc.

Notes on image data compatibility of the "Memory Stick"
- This camera conforms with the Design rule for Camera File system universal standard established by the JEITA (Japan Electrics and Information Technology Industries Association). You cannot play back on your camera still images recorded on other equipment (DCR-TRV890E/TRV900/TRV900E, DSC-D700, DSC-D770) that does not conform with this universal standard. (These models are not sold in some areas.)
- Playback of images recorded with your camera on other equipment and playback of images recorded or edited with other equipment on your camera are not guaranteed.

Precaution on copyright
Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Do not shake or strike the camera
In addition to malfunctions and inability to record images, this may render the floppy disks or "Memory Stick"s unusable or image data breakdown, damage or loss may occur.

LCD screen, finder (only models with a finder) and lens
- The LCD screen and the finder are manufactured using extremely high-precision technology so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue or green in color) that constantly appear on the LCD screen and the finder. These points are normal in the manufacturing process and do not affect the recording in any way.
- Be careful when placing the camera near a window or outdoors. Exposing the LCD screen, the finder or the lens to direct sunlight for long periods may cause malfunctions.

Do not get the camera wet
When taking pictures outdoors in the rain or under similar conditions, be careful not to get the camera wet. If moisture condensation occurs, refer to page 74 and follow the instructions on how to remove it before using the camera.

Back up recommendation
To avoid the potential risk of data loss, always copy (back up) data to a disk.

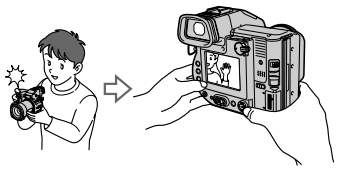
When the camera is used for long periods
Note that the camera body may become hot.

Introduction

Deletes undesired images right away, checking the image after shooting

The digital still camera is able to play back the image and delete it right away.

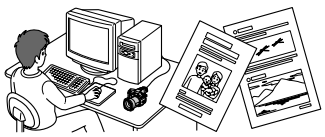
Recording still images: page 18
Playing back still images: page 26
Deleting images (DELETE): page 66



Captures images with your computer

You can easily copy images onto your computer using a floppy disk or a "Memory Stick," and view and modify images on your computer using application software.

Viewing images using a computer: page 29



Records a moving picture with audio

The digital still camera can record a moving picture with audio for maximum 60 seconds.

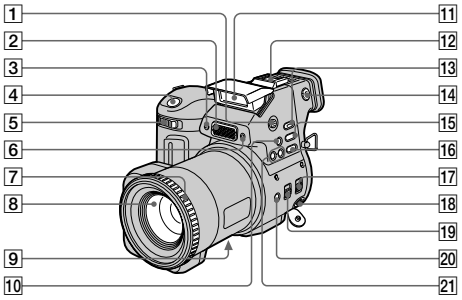
Recording moving images: page 25

Selects the recording mode from various types of recordings according to your situation

Creating Clip Motion Files: page 49
Recording still images for e-mail (E-MAIL): page 51
Adding audio files to still images (VOICE): page 51
Recording text documents (TEXT): page 52
Recording still images as uncompressed files (TIFF): page 53

Identifying the parts

See the pages in parentheses for details of operation.



1 **OPEN (FLASH) button (23)**

2 **Built-in microphone**
Do not touch while recording.

3 **Self-timer lamp (23)**

4 **Shutter button (18, 25)**

5 **Zoom lever (21)**

6 **Photocell window for flash**
Do not block while recording.

7 **Focus ring (55)**

8 **Lens**

9 **DC IN cover/DC IN jack (10, 13)**

10 **(One-push white balance) button (59)**

11 **Flash (23)**

12 **Accessory shoe**

13 **SPOT METER button (57)**

14 **Finder adjustment dial (19)**

15 **WHITE BALANCE button (59)**

16 **PROGRAM AE button (56)**

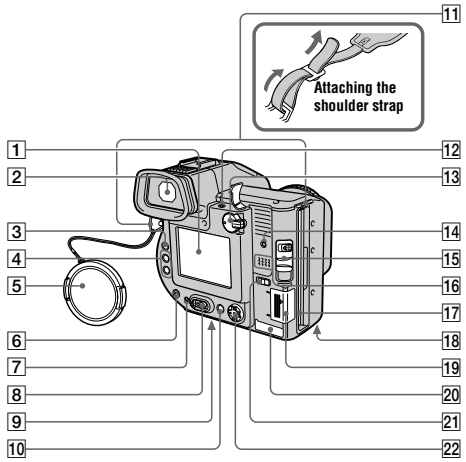
17 **STEADY SHOT ON/OFF switch (22)**

18 **A/V OUT (MONO) jack (64)**
Audio output is monaural.

19 **FOCUS AUTO/MANUAL switch (54, 55)**

20 **(Macro) button (54)**

21 **PROGRAM AE +/– buttons (56)**



1 **LCD screen**

2 **Finder (19)**

3 **LCD ON/OFF switch (20)**

4 **VOL +/– buttons (28)**

5 **Lens cap (supplied)**

6 **(Flash) button/ (Flash) lamp (23)**

7 **POWER ON/OFF (CHG) (Charge) lamp (11, 14)**

8 **POWER switch (14)**

9 **Tripod receptacle (bottom surface)**
Use a tripod with a screw length of less than 6.5 mm (7/32 inch). You cannot firmly secure the camera to tripods having longer screws, and may damage the camera.

10 **DISPLAY button (22)**

11 **Hooks for strap**

12 **ACC (Accessory) jack**

13 **PLAY/STILL/MOVIE selector (40)**

14 **Access lamp (18, 19)**

15 **DISK EJECT lever (16)**

16 **Speaker**

17 **Floppy disk slot (16)**

18 **Battery cover/PUSH button (bottom surface) (9)**

19 **"Memory Stick" cover/ "Memory Stick" slot (17)**

20 **USB cover/USB jack (31)**

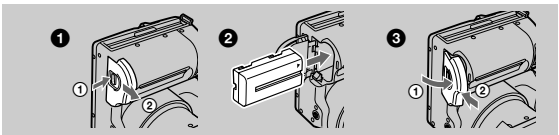
21 **MS /FD ("Memory Stick"/floppy disk) selector**

22 **Control button (40)**

Preparing the power supply

Installing the battery pack

Your camera operates only with the NP-F330 (supplied)/F550 (not supplied) "InfoLITHIUM" battery pack* (L series). See page 77 for more information about "InfoLITHIUM" battery pack.



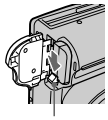
1 Open the battery cover.
Slide the battery cover in the direction of the arrow while pressing the PUSH button.

2 Install the battery pack.
Insert the battery pack with the ▲ mark facing toward the battery compartment as illustrated.

3 Close the battery cover.

To remove the battery pack

Open the battery cover. Slide the battery eject lever rightward, and remove the battery pack.
Be careful not to drop the battery pack when removing it.



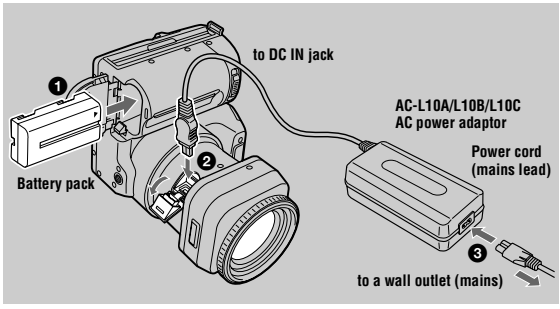
Battery eject lever

**** What is "InfoLITHIUM"?***

"InfoLITHIUM" is a lithium ion battery pack which can exchange information such as battery consumption with compatible video equipment. "InfoLITHIUM" L series battery packs have the mark. "InfoLITHIUM" is a trademark of Sony Corporation.

Charging the battery pack

When the camera is turned on, you cannot charge the battery pack. Be sure to turn off the power of the camera.



1 Insert the battery pack into your camera.

2 Open the DC IN cover and connect the AC power adaptor to the DC IN jack of your camera with the ▲ mark facing up.

3 Connect the power cord (mains lead) to the AC power adaptor and then to a wall outlet (mains).
The POWER ON/OFF (CHG) lamp (orange) below the LCD screen lights up when charging begins. When the POWER ON/OFF (CHG) lamp goes off, **full charge** is completed.

After charging the battery pack

Disconnect the AC power adaptor from the DC IN jack on your camera.

Battery remaining indicator

The LCD screen or finder on the camera shows the remaining time for which you can still record or play back images.
This indication may not be entirely accurate depending on the conditions of use and the operating environment.
Charging at a room temperature of 10°C to 30°C (50°F to 86°F) is recommended.

NP-F330 (supplied)/F550 (not supplied) battery pack

When you record images in an extremely cold location or using the LCD screen, the operating time becomes short. When using the camera in an extremely cold location, place the battery pack in your pocket or other place to keep it warm, then insert the battery pack into the camera just before recording. When using a pocket heater, take care not to let the heater directly contact the battery.

Auto power-off function

If you do not operate the camera for about three minutes during recording, the camera turns off automatically to prevent wearing down the battery pack. To use the camera again, slide the POWER switch to the right to turn on the camera again.

Note on the POWER ON/OFF (CHG) lamp during charging

The POWER ON/OFF (CHG) lamp may flash:
• When a malfunction occurs in the battery pack (page 84).
The POWER ON/OFF (CHG) lamp does not light up:
• When the battery pack is not installed properly.

Charging time

Battery pack	Full charge (min.)
NP-F330 (supplied)	Approx. 150
NP-F550	Approx. 210

Approximate time to charge a completely discharged battery pack at a temperature of 25°C (77°F).

Battery life and number of images that can be recorded/played back

STILL mode recording/playback when using floppy disks

	NP-F330 (supplied)		NP-F550	
	Battery life (min.)	Number of images	Battery life (min.)	Number of images
Continuous recording*	Approx. 65	Approx. 650	Approx. 150	Approx. 1600
Continuous playback**	Approx. 80	Approx. 2200	Approx. 170	Approx. 4800

STILL mode recording/playback when using "Memory Stick"s

	NP-F330 (supplied)		NP-F550	
	Battery life (min.)	Number of images	Battery life (min.)	Number of images
Continuous recording*	Approx. 80	Approx. 1600	Approx. 170	Approx. 3400
Continuous playback**	Approx. 100	Approx. 3000	Approx. 230	Approx. 6900

Approximate battery life and number of images that can be recorded/played back at a temperature of 25°C (77°F) with a fully charged battery pack, 640×480 image size and in NORMAL recording mode.

* Recording at about 5-second intervals when using a floppy disk, or at about 3-second intervals when using a "Memory Stick"

** Playing back single images continuously at about 2-second intervals

MOVIE mode recording when using floppy disks

	NP-F330 (supplied)	NP-F550
	Battery life (min.)	Battery life (min.)
Continuous recording	Approx. 85	Approx. 180

MOVIE mode recording when using "Memory Stick"s

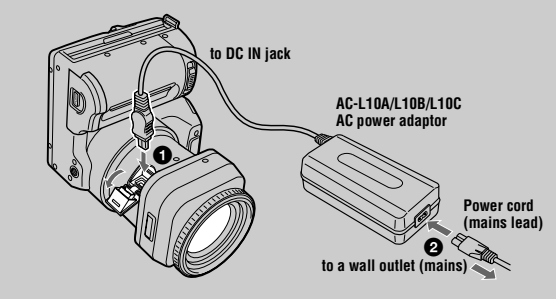
	NP-F330 (supplied)	NP-F550
	Battery life (min.)	Battery life (min.)
Continuous recording	Approx. 90	Approx. 190

Approximate time that can be recorded at a temperature of 25°C (77°F) and 160×112 image size with a fully charged battery pack.

Notes

- The battery life and number of images will be decreased when using at low temperature, using the flash, turning the power on/off frequently, or using the zoom.
- The capacity of the floppy disk or "Memory Stick" is limited. The above figures are as a guide when you continuously record/play back by replacing the floppy disk or "Memory Stick."
- If sufficient battery remaining time is indicated but the power runs out soon, fully charge the battery so that the correct battery remaining time appears.
- Do not short the DC plug of the AC power adaptor with a metallic object, as this may cause a malfunction.

Using the AC power adaptor



❶ Open the DC IN cover and connect the AC power adaptor to the DC IN jack of your camera with the ▲ mark facing up.

❷ Connect the power cord (mains lead) to the AC power adaptor and then to a wall outlet (mains).

Using a car battery

Use Sony DC adaptor/charger.

Using your camera abroad

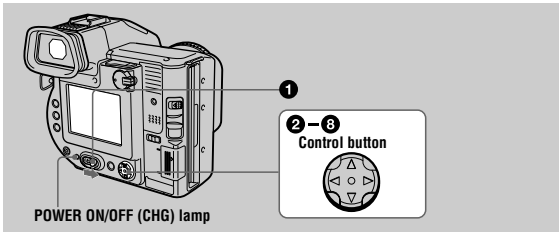
For details, see page 76.

When using the AC power adaptor

Be sure to use it near a wall outlet. If a malfunction occurs, disconnect the plug from the wall outlet.

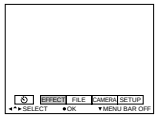
Setting the date and time

When you first use your camera, set the date and time. If these are not set, the CLOCK SET screen appears whenever you turn on your camera.

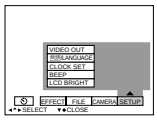


❶ Slide the POWER switch to the right to turn on the power.
The POWER ON/OFF (CHG) (green) lamp lights up.

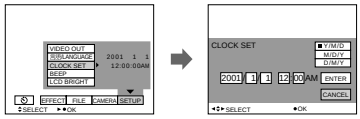
❷ Press ▲ on the control button.
The menu bar appears on the LCD screen or on the finder.



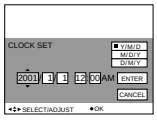
❸ Select [SETUP] with ► on the control button, then press the center ●.



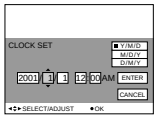
❹ Select [CLOCK SET] with ▲/▼ on the control button, then press the center ●.



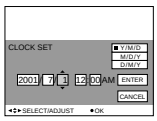
5 **Select the desired date display format with ▲/▼ on the control button, then press the center ●.**
Select from [Y/M/D] (year/month/day), [M/D/Y] (month/day/year), or [D/M/Y] (day/month/year).



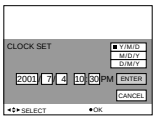
6 **Select the year, month, day, hour or minute item you want to set with ◀/▶ on the control button.**
The item to be set is indicated with ▲/▼.



7 **Set the numeric value with ▲/▼ on the control button, then press the center ● to enter it.**
After entering the number, ▲/▼ moves to the next item. If you selected [D/M/Y] in step **5**, set the time on a 24-hour cycle.

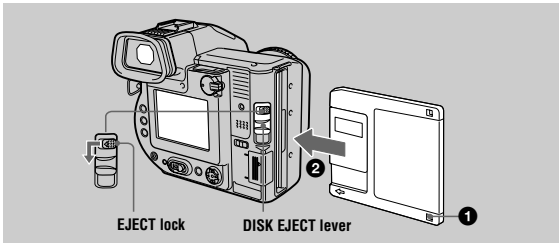


8 **Select [ENTER] with ▶ on the control button, then press the center ● at the desired moment to begin clock movement.**
The date and time are entered.

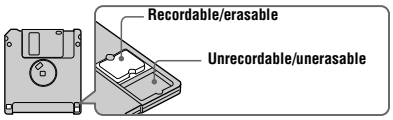


To cancel the date and time setting
Select [CANCEL] with ▲/▼/◀/▶ on the control button, then press the center ●.

Inserting a floppy disk



1 **Check that the write protect tab is set to the recordable position for recording.**



2 **Insert the floppy disk until it clicks.**

Usable floppy disks

- Size: 3.5 inch
- Type: 2HD (1.44 MB)
- Format: MS-DOS format (512 bytes × 18 sectors)

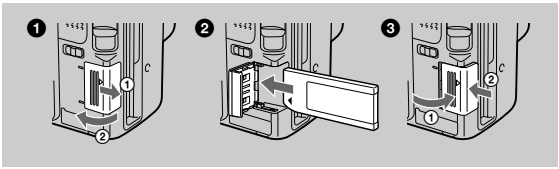
Notes

- Do not insert the media other than the floppy disks described above.
- You cannot use the optional MSAC-FD2M/FD2MA Floppy Disk Adaptor for Memory Stick.
- Never remove the floppy disk, turn off the power, or change the position of the MS/FD selector while the access lamp is lit up.

Removing the floppy disk

While sliding the EJECT lock to the left, slide down the DISK EJECT lever.

Inserting a “Memory Stick”



1 **Open the “Memory Stick” cover.**
Slide the cover in the direction of the arrow.

2 **Insert the “Memory Stick.”**
Insert the “Memory Stick” with the ▶ mark facing toward the “Memory Stick” slot as illustrated until it clicks.

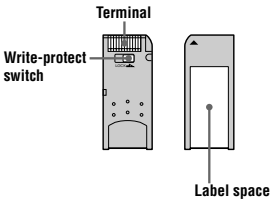
3 **Close the “Memory Stick” cover.**

Removing the “Memory Stick”

Open the “Memory Stick” cover, then push the “Memory Stick” once lightly.

Notes

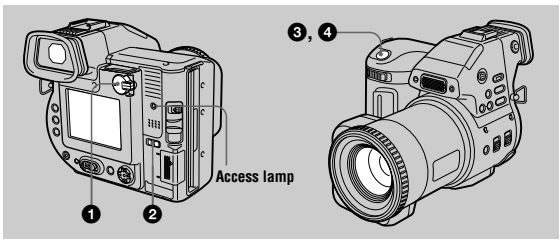
- If you do not insert the “Memory Stick” firmly until it clicks, a message such as “MEMORY STICK ERROR” will be displayed.
- Never remove the “Memory Stick,” turn off the power, or change the position of the MS/FD selector while the access lamp is lit up.
- You cannot record or edit images on a “Memory Stick” if the write-protect switch is set to the LOCK position.



The position or shape of the write-protect switch depends on the type of the “Memory Stick.”
“Memory Stick” and MEMORY STICK are trademarks of Sony Corporation.

Recording still images

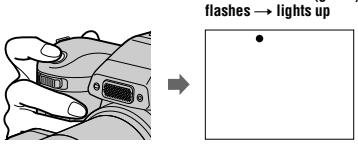
Still images are recorded in JPEG format.
To record still images, slide the POWER switch to the right to turn on the power and insert a floppy disk or a “Memory Stick.”



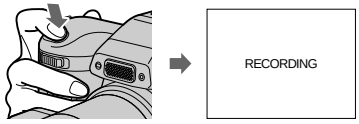
1 **Set the PLAY/STILL/MOVIE selector to STILL.**

2 **Select the recording media using the MS/FD selector.**
MS: When recording on the “Memory Stick.”
FD: When recording on the floppy disk.

3 **Press and hold the shutter button halfway down.**
The beeps sound and the image is frozen. However, **the image has not been recorded yet**. While the AE lock indicator ● is flashing, the camera automatically adjusts the exposure and focus of the captured image. When the camera finishes the automatic adjustments, **the AE lock indicator ● stops flashing, then lights up, and the camera is ready for recording.**
If you release the shutter button, the recording will be canceled.



4 Press the shutter button fully down.
The shutter clicks. "RECORDING" appears on the LCD screen or on the finder, and the image will be recorded on the floppy disk or the "Memory Stick." When "RECORDING" disappears from the LCD screen or finder, you can start the next recording.



For the number of images you can record on a floppy disk or a "Memory Stick"

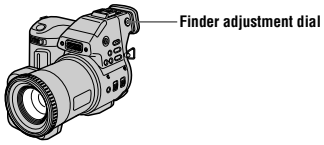
See page 48.

Notes

- When recording bright subjects, the color of the LCD screen may change after the AE is locked. However, this will not affect the recorded image.
- While the image is being recorded on a floppy disk or a "Memory Stick," the access lamp lights. When this lamp is lit, do not shake or strike the camera. Also, do not turn the power off, not change the position of the MS/FD selector, or not remove the battery pack/floppy disk/"Memory Stick." Otherwise, an image data breakdown may occur and the floppy disk or the "Memory Stick" may become unusable.
- When you press the shutter button fully down at once, the camera starts recording after the automatic adjustment is complete. However, the recording cannot be carried out while the ϟ lamp (page 8) is flashing. (During this time, the camera is charging the flash.)

Recording images with the finder

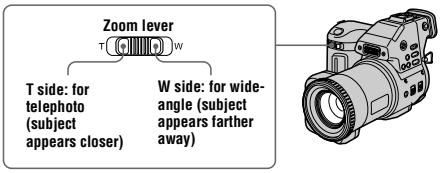
Turn the finder adjustment dial until the image appears clearly within the finder, then record the image.



Note

The finder display is automatically turned off when your face is not near the finder.

Using the zoom feature



If you cannot get a sharp focus on a close subject

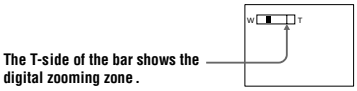
Slide the zoom lever to the W side and move closer to the subject until the focus is sharp (page 54).

Minimum focal distance to the subject

W side: About 25 cm (9 7/8 inches)
T side: About 80 cm (31 1/2 inches)
To record even closer subjects, see page 54.

Digital zoom function

This camera has a digital zoom function.
Digital zoom enlarges the image by digital processing, and it starts to function when the zoom exceeds 10×.



Using digital zoom

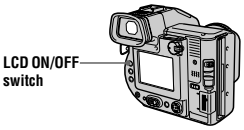
- The maximum zoom magnification is 20×.
- Digital zooming deteriorates the picture quality. When digital zoom is not necessary, set [DIGITAL ZOOM] to [OFF] in the menu settings (page 45).

Note

Digital zoom does not work for moving images.

Turning off the LCD screen

Press LCD ON/OFF switch to turn off the LCD screen. The battery life will be longer.



Notes

- You cannot turn off the LCD screen when [DEMO] is set to [ON] in the menu settings.
- When both the LCD screen and the finder display are turned off, you can only use followings:
  —LCD ON/OFF switch
  —POWER switch
  —PLAY/STILL/MOVIE selector
  —Shutter button
  —MS/FD selector
  —STEADY SHOT ON/OFF switch
  —FOCUS AUTO/MANUAL switch
  —Focus ring

Checking the last recorded image (Quick Review)

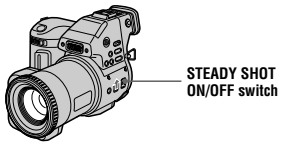
You can check the last recorded image by clearing the menu bar from the screen (page 41) and pressing ◀ on the control button.
To return to the normal recording mode: press the shutter button lightly, or select [RETURN] with ◀/▶ on the control button and then press the center ●.
To delete the image: first select [DELETE] on the Quick Review screen with ◀/▶ on the control button and press the center ●, and then select [OK] with ▲/▼ on the control button and press the center ●.

Adjusting the brightness of the LCD screen

Adjust the brightness with the [LCD BRIGHT] item in the menu settings (page 47). This adjustment does not affect the brightness of the images recorded on the floppy disk or the "Memory Stick."

Activating the SteadyShot function

When the SteadyShot function is working, the camera compensates for camera-shake.



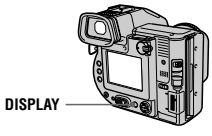
Set the STEADY SHOT ON/OFF switch to ON. The (SteadyShot) indicator appears on the LCD screen or on the finder.

Notes

- The SteadyShot function will not correct excessive camera-shake.
- If you use a wide conversion lens (not supplied), this lens may influence the SteadyShot function.

The indicators on the LCD screen or on the finder during recording

Press DISPLAY to turn on/off the indicators on the LCD screen or on the finder. See page 89 for a detailed description of the indicators.

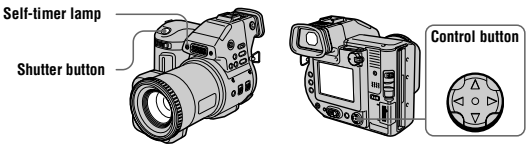


Notes

- You cannot turn off the (self-timer) indicator and some of the indicators used in advanced operations.
- The indicators on the LCD screen or on the finder are not recorded.

Using the self-timer

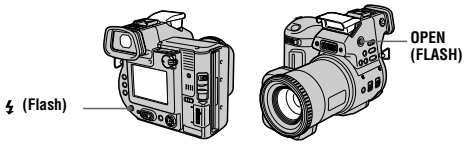
When you use the self-timer function, the subject is recorded 10 seconds after you press the shutter button.



Select ⏲ on the LCD screen or on the finder with ◀/▶/▲/▼ on the control button, then press the center ●. The ⏲ (self-timer) indicator appears on the LCD screen or on the finder, and the subject is recorded 10 seconds after you press the shutter button. The self-timer lamp flashes after you press the shutter button until the image is recorded.

Recording images with the flash

Press OPEN (FLASH) to pop up the flash. The initial setting is AUTO (no indication). In this mode, the flash automatically strobes when the surroundings become dark. To change the flash mode, press ϟ (Flash) repeatedly so that the flash mode indicator appears on the LCD screen or on the finder. This setting can be set only when the flash is popped up.



Each time you press the button, the indicator changes as follows.
(No indication) → 👁 → ϟ → Ⓢ → (No indication)

👁 Auto red-eye reduction : The flash strobes before recording to reduce the red-eye phenomenon.
ϟ Forced flash : The flash strobes regardless of the surrounding brightness.
Ⓢ No flash : The flash does not strobe.

You can change the amount of the flash light with [FLASH LEVEL] in the menu settings (page 46).

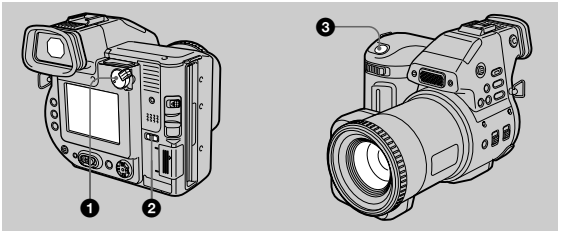
▼ Recording

Notes

- The recommended shooting distance is 0.6 to 2.5 m (23 5/8 inches to 8 1/3 feet).
- Attaching a conversion lens (not supplied) may block the light from the flash and the recorded image may be eclipsed.
- You cannot use the built-in flash and an external strobe at the same time.
- The Ⓢ indicator appears when the flash is not popped up under situations that you should use the flash.
- 👁 Auto red-eye reduction may not produce the desired red-eye reduction effects depending on individual differences, the distance to the subject, if the subject does not see the pre-strobe, or other conditions. In addition, red-eye reduction effects are also difficult to obtain if you select a slow shutter speed in shutter priority mode of the PROGRAM AE function.
- The flash effect is not obtained easily when you use forced flash in a bright location.

Recording moving images

Moving images with audio are recorded in MPEG format.
To record moving images, slide the POWER switch to the right to turn on the power and insert a floppy disk or a “Memory Stick.”



❶ Set the PLAY/STILL/MOVIE selector to MOVIE.

❷ Select the recording media using the MS/FD selector.
MS: When recording on the “Memory Stick.”
FD: When recording on the floppy disk.

❸ Press the shutter button fully down.
“REC” appears on the LCD screen or finder, and the image and sound are recorded on the floppy disk or “Memory Stick.”

If you press the shutter button momentarily
The image and sound are recorded for 5 seconds. The recording time can be set to 10 or 15 seconds with [REC TIME SET] in the menu settings (page 45).

If you hold the shutter button down
The image and sound are recorded while the shutter button is held down for up to 60 seconds. However, when [IMAGE SIZE] in the menu settings is set to [320×240], the maximum recording time is 15 seconds (page 48).

Adjusting the brightness of the LCD screen, zooming or using the self-timer

See pages 20 to 23.

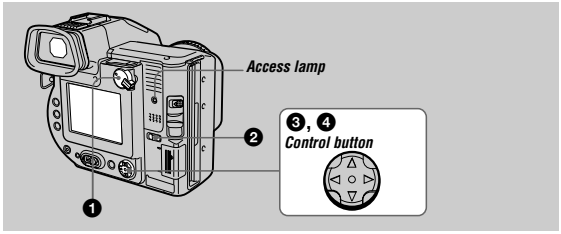
LCD screen or finder indicators during recording

Press DISPLAY to turn on/off the indicators on the LCD screen or on the finder. These indicators are not recorded. See page 89 for a detailed description of the indicators.

▼ Recording

► Playback

Playing back still images

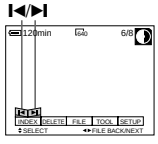


❶ Set the PLAY/STILL/MOVIE selector to PLAY.
The last recorded image (still or moving) appears on the LCD screen or on the finder.

❷ Select the playback media using the MS/FD selector.
MS: When playing back images in the “Memory Stick.”
FD: When playing back images in the floppy disk.

❸ Press ▲ on the control button to display the menu bar on the LCD screen or on the finder.

❹ Select the desired still image with the control button.
Press ▲/▼/◀/▶ on the control button to select ⏮/⏭ on the LCD screen or on the finder, then press ◀/▶.
⏮: To display the preceding image.
⏭: To display the next image.



When the menu bar is not displayed

You can directly select and play back the image with ◀/▶ on the control button.

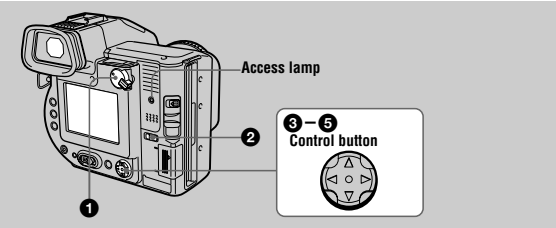
Notes

- You might not be able to correctly play back images recorded with this camera on other equipment.
- You may not be able to play back images whose image sizes are larger than the maximum image size that can be used with this camera for recording.

LCD screen or finder indicators during still image playback

Press DISPLAY to turn on/off the indicators on the LCD screen or on the finder. See page 90 for a detailed description of the indicators.

Playing back moving images

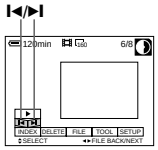


1 Set the PLAY/STILL/MOVIE selector to PLAY.
The last recorded image (still or moving) appears on the LCD screen or on the finder.

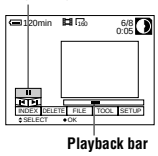
2 Select the playback media using the MS/FD selector.
MS: When playing back images in the "Memory Stick."
FD: When playing back images in the floppy disk.

3 Press ▲ on the control button to display the menu bar on the LCD screen or on the finder.

4 Select the desired moving image with the control button.
Moving images are displayed one size smaller than still images.
Press ▲/▼/◀/▶ on the control button to select I◀/▶I on the LCD screen or on the finder, then press ◀/▶.
I◀: To display the preceding image.
▶I: To display the next image.



5 Select the ▶ (playback) button on the LCD screen or on the finder with ▲/▼/◀/▶ on the control button, then press the center ●.
The moving image and sound are played back.
During playback, ▶ (playback) changes to ❚❚ (pause).



To pause playback

Select ❚❚ (pause) on the LCD screen or on the finder with ▲/▼/◀/▶ on the control button, then press the center ●.

When the menu bar is not displayed

You can directly select the image with ◀/▶ on the control button, and play back the image and sound by pressing the center ●. When you press the center ● during playback, playback is paused.

Adjusting the volume

Press VOL +/– to adjust the volume.

LCD screen or finder indicators during moving image playback

Press DISPLAY to turn on/off the indicators on the LCD screen or on the finder. See page 90 for a detailed description of the indicators.

Viewing images using a computer

You can view or modify data recorded with your camera using application software on a computer, or attach it to an E-mail.

Viewing images using a floppy disk drive

For Windows 98 users

1 Start up your computer and insert the floppy disk into the disk drive of your computer.

2 Open [My Computer] and double-click [3 1/2 Floppy (A:)].

3 Double-click the desired data file.
Copying a file to the hard disk of your computer before viewing it is recommended when playing back an audio file or a moving image. If you play back the file directly from the floppy disk, the image and sound may break off.

Viewing images on a computer connected using the USB cable

This section describes the method for viewing images on a computer using the supplied USB cable.
What is the USB connection? : You can connect the camera to your computer using the USB cable, to view or modify the images stored in a floppy disk or "Memory Stick."
To make the USB connection: You have to install the USB driver in your computer beforehand.
Be sure to also see the operation manuals for your computer and application software.

Notes

- Data recorded with your camera is stored in the following formats. Make sure that applications that support these file formats are installed on your computer.
  —Still images (other than TEXT mode, uncompressed mode and Clip Motion): JPEG format
  —Moving images/audio: MPEG format
  —Uncompressed mode still images: TIFF format
  —TEXT mode/Clip Motion: GIF format
- ActiveMovie Player (DirectShow) must be installed (to play back moving pictures).
- QuickTime 3.2 or newer must be installed (to play back moving pictures).

■ Recommended computer environment

Recommended Windows environment

OS:Microsoft Windows 98, Windows 98SE, Windows Me, Windows 2000 Professional
The above OS is required to be installed at the factory.
Operation is not assured in an environment upgraded to the operating systems described above.
CPU:MMX Pentium 200 MHz or faster
The USB connector must be provided as standard.

Recommended Macintosh environment

Macintosh computer with the Mac OS 8.5.1/8.6/9.0
The above OS is required to be installed at the factory.
However, note that the update to Mac OS 9.0 should be used for the following models with the Mac OS 8.6 standard installation at the factory:
iMac with a slot loading type CD-ROM drive, iBook, Power Mac G4
The USB connector must be provided as standard.

Notes

- Operations are not guaranteed for either the Windows or Macintosh environment if you connect two or more USB equipment to a single computer at the same time (except for the USB keyboard and mouse which are provided as standard), or when using a hub.
- Depending on the type of USB equipment that is used simultaneously, some equipment may not operate.
- Operations are not guaranteed for all the recommended computer environments mentioned above.

- Windows and ActiveMovie, DirectShow are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Macintosh and Mac OS, QuickTime are either registered trademarks or trademarks of Apple Computer, Inc.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies. Furthermore, "™" and "®" are not mentioned in each case in this manual.

■ Installing the USB driver

Do not connect your camera to your computer before installing the USB driver.

First, install the USB driver to the computer. The USB driver is contained together with application software for viewing images on a CD-ROM which is supplied with your camera.
If the drive is not recognized properly, see "Troubleshooting" on page 79.

For Windows 98, Windows 98SE, Windows Me and Windows 2000 Professional users

❶ Make sure that the camera is not connected to your computer.
Do not connect the USB cable in this step.

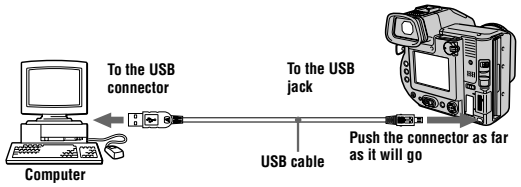
❷ Turn on your computer and allow Windows to load.

❸ Insert the supplied CD-ROM in the CD-ROM drive of your computer.
The application software screen appears.

❹ Click "USB Driver Installation for Windows 98/98SE, Windows Me, Windows 2000".
USB driver installation starts.

❺ Follow the on-screen messages to install the USB driver.
If the message appears after the installation to verify that you restart the computer, restart the computer.

❻ Connect the USB jack (mini-B) on your camera with the USB connector on your computer using the supplied USB cable.



❼ Insert a floppy disk or a "Memory Stick" into your camera, and set the MS/FD selector to the appropriate position according to the media inserted.

❽ Connect the AC power adaptor and turn on your camera.
"USB MODE" appears on the LCD screen or on the finder of your camera and the camera is set to communication standby mode. Your computer recognizes the camera, and the Windows Add Hardware Wizard starts.

❾ Follow the on-screen messages to recognize the hardware.
The Add Hardware Wizard starts twice because two different USB drivers are installed. Be sure to allow the installation to complete without interrupting it. If the message appears after the installation to verify that you restart the computer, restart the computer.

For Macintosh users

❶ Turn on your computer and allow the Mac OS to load.

❷ Insert the supplied CD-ROM in the CD-ROM drive of your computer.

❸ Double-click the CD-ROM drive icon to open the window.

❹ Double-click the icon of the hard disk containing the "System Folder" to open the window.

❺ Move the following two files from the window opened in step ❸ to the "System Folder" icon in the window opened in step ❹ (drag and drop).
- Sony USB Driver
- Sony USB Shim

❻ When "Put these items into the Extensions folder?" appears, click "OK."

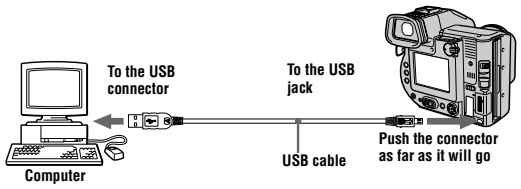
❼ Restart your computer and connect the USB cable.

■ Viewing images

For Windows 98, Windows 98SE, Windows Me and Windows 2000 Professional users

❶ Turn on the power of your computer and allow Windows to load.

❷ Connect one end of the supplied USB cable to the USB jack (mini-B) on the camera and the other end to the USB connector on your computer.



❸ Insert a floppy disk or "Memory Stick" into your camera, and set the MS/FD selector to the appropriate position according to the media inserted.

❹ Connect the AC power adaptor to your camera and then to a wall outlet (mains) and turn on the power of your camera.
"USB MODE" appears on the LCD screen or on the finder of the camera.

❺ Open "My Computer" on Windows and double-click the newly recognized drive, "Removable Disk"(Example (D:)*).
The folders inside the floppy disk or "Memory Stick" are displayed.
If the drive is not recognized properly, see "Troubleshooting" on page 79.

* Drive identifier depends on your computer.

❻ Select and double-click the desired image/audio file from the folder.
For the detailed folder and file name, see "Image file storage destinations and image file names" (page 36).

When viewing an image in a floppy disk

Desired file type	Double-click in this order
Audio*	"Voice" folder → Audio file*
E-mail image	"E-mail" folder → Image file
Other files	Image file

When viewing an image in a "Memory Stick"

Desired file type	Double-click in this order
Still image	"Dcim" folder → "100msdcf" folder → Image file
Moving image*	"Mssony" folder → "Moml0001" folder → Image file*
Audio*	"Mssony" folder → "Momlv100" folder → Audio file*
Clip Motion image	"Dcim" folder → "100msdcf" folder → Image file
E-mail image TIFF image (uncompressed)	"Mssony" folder → "Imcif100" folder → Image file

* Copying a file to the hard disk of your computer before viewing it is recommended. If you play back the file directly from the floppy disk or "Memory Stick," the image and sound may break off.

For Windows Me or Windows 2000 Professional users

When using Windows Me or Windows 2000 Professional, the following procedures are recommended when disconnecting the USB cable from your computer, ejecting the floppy disk or "Memory Stick" from the camera, or changing the position of the MS/FD selector, while it is connected to your computer.

① Stop the drive by clicking on the "Unplug/Eject" icon in the task tray.

② Carry out the operation after the message, confirming the safe removal of the hardware, appears.

Notes on using your computer

Floppy disk/"Memory Stick"

- **Format the floppy disk or "Memory Stick" only using this camera (page 72). You cannot format the floppy disk or "Memory Stick" using a computer via the USB cable.**
- Use only a DOS/V 2HD format floppy disk. Other disks will not be recognized by a computer.
- Do not optimize the "Memory Stick" on a Windows machine. This will shorten the "Memory Stick" life.
- Do not compress the data on the floppy disk or "Memory Stick." Compressed files cannot be played back on your camera.

Software

- Depending on your application software, the file size may increase when you open a still image file.
- When you load an image modified using the supplied retouching software from your computer to the camera or when you directly modify the image on the camera, the image format will differ so the "FILE ERROR" message may appear and you may be unable to open the file.
- Depending on your application software, only the first frame of a Clip Motion image may be displayed.

Communications with your computer

Communications between your camera and your computer may not recover after recovering from Standby or Sleep.

Other

When connecting the camera to a computer or when using an external power source, remove the battery pack from inside the camera.

Image file storage destinations and image file names

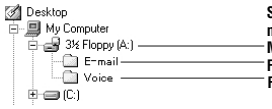
Image files recorded with your camera are grouped in folders by recording mode. Images in a floppy disk and ones in a "Memory Stick" have different file names. The meanings of the file names are as follows.

When using floppy disks

□□□ stands for any number within the range from 001 to 999.
△ stands for one of the following characters below.

S: Still image file recorded at 640×480 size
F: Still image file of more than 640×480 size
V: Moving image file recorded at 160×112 size
W: Moving image file recorded at 320×240 size
T: Still image file recorded in TEXT mode
C: Clip Motion file recorded in NORMAL mode
M: Clip Motion file recorded in MOBILE mode

For Windows 98 users (The drive recognizing the floppy disk is [A].)


Desktop
My Computer
3½ Floppy (A:)
E-mail
Voice
(C:)
Storage destination containing still image, moving image, TEXT mode image and Clip Motion image data
Folder containing E-mail mode image data
Folder containing VOICE mode audio data

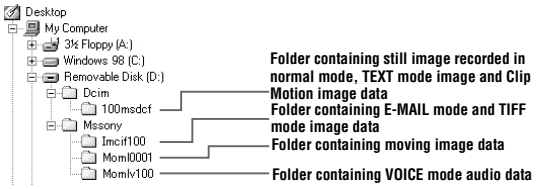
Location	File	Meaning
3 1/2 Floppy [A:]	MVC-□□□△.JPG	• Still image file recorded normally • Still image file recorded in — E-MAIL mode (page 51) — VOICE mode (page 51)
	MVC-□□□△.411	• INDEX display file This file can only be played back on your camera.
	MVC-□□□△.MPG	• Moving image file
	MVC-□□□△.GIF	• Still image file recorded in — TEXT mode (page 52) — Clip Motion (page 49)
	MVC-□□□△.THM	• Index image file recorded in — TEXT mode (page 52) — Clip Motion (page 49)
E-mail folder	MVC-□□□E.JPG	• Small-size image file recorded in E-MAIL mode (page 51)
Voice folder	MVC-□□□A.MPG	• Audio file recorded in VOICE mode (page 51)

• The numerical portions of the following files are the same.
—An image file recorded in E-MAIL mode and its corresponding small-size image file
—An audio file recorded in VOICE mode and its corresponding image file
—An image file recorded in TEXT mode and its corresponding index image file
—An image file recorded with Clip Motion and its corresponding index image file
• INDEX display files other than the TEXT mode and Clip Motion files are played back only on this camera.

When using "Memory Stick"s

□□□□ stands for any number within the range from 0001 to 9999.

For Windows 98 users (The drive recognizing the camera is "D.")



Folder	File	Meaning
100msdcf	DSC0□□□□.JPG	• Still image file recorded normally • Still image file recorded in — E-MAIL mode (page 51) — TIFF mode (page 53) — VOICE mode (page 51)
	CLP0□□□□.GIF	• Clip Motion file recorded in NORMAL mode (page 49)
	CLP0□□□□.THM	• Index image file of Clip Motion file recorded in NORMAL mode
	MBL0□□□□.GIF	• Clip Motion file recorded in MOBILE mode (page 49)
	MBL0□□□□.THM	• Index image file of Clip Motion file recorded in MOBILE mode
	TXT0□□□□.GIF	• Still image file recorded in TEXT mode (page 52)
	TXT0□□□□.THM	• Index image file of still image file recorded in TEXT mode

Folder	File	Meaning
Imcif100	DSC0□□□□.JPG	• Small-size image file recorded in E-MAIL mode (page 51)
	DSC0□□□□.TIF	• Uncompressed image file recorded in TIFF mode (page 53)
Moml0001	MOV0□□□□.MPG	• Moving image file recorded normally
Momlv100	DSC0□□□□.MPG	• Audio file recorded in VOICE mode (page 51)

The numerical portions of the following files are the same.
—A small-size image file recorded in E-MAIL mode and its corresponding image file
—An uncompressed image file recorded in TIFF mode and its corresponding image file
—An audio file recorded in VOICE mode and its corresponding image file
—An image file recorded in TEXT mode and its corresponding index image file
—An image file recorded with Clip Motion and its corresponding index image file

Tips

The digital still camera saves recorded images as digital data. The format of the saved data is called as the file format. The formats that can be used with this camera are as follows:

JPEG format

Most digital still cameras, operating systems of computers, and browser software adopt this format. This format is able to compress files without appreciable deterioration. However, if the image is compressed and saved on repeated occasions, the image will deteriorate. This camera records still images using the JPEG format for normal recording.

GIF format

Using this format, the image will not deteriorate even if the image is compressed and saved on repeated occasions. This format limits the number of colors to 256 colors. This camera records still images using the GIF format in Clip Motion (page 49) or TEXT mode (page 52).

TIFF format

Stores shooting images without compression, so the image does not deteriorate. Most of operating systems and applications correspond to this format. This camera records still images using the TIFF format for the TIFF mode (page 53).

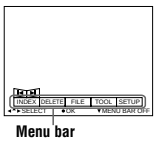
MPEG format

This format is very typical for moving images. This camera records audio using the MPEG format for the moving images recording and the VOICE mode (page 51).

Turning on/off the operation buttons (menu bar) on the LCD screen or on the finder

Press ▲ to display the menu bar on the LCD screen or on the finder.

Press ▼ to clear the menu bar from the LCD screen or on the finder.



Menu bar

Note

You cannot clear the menu bar on the INDEX screen (page 61).

Selecting items or images on the LCD screen or on the finder

❶ Press ▲/▼/◀/▶ on the control button to select the item you want to set or the image you want to display.

The color of the selected item or the frame of the selected image changes from blue to yellow.

❷ Press the center ● to enter the item.

Repeat steps ❶ and ❷ to execute each function.

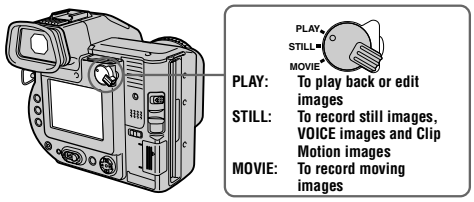
The "Advanced operations" section of this manual refers to selecting and entering items by the above procedure as "Select [item name]."

Before performing advanced operations

This section describes the basic control methods that are frequently used for "Advanced operations."

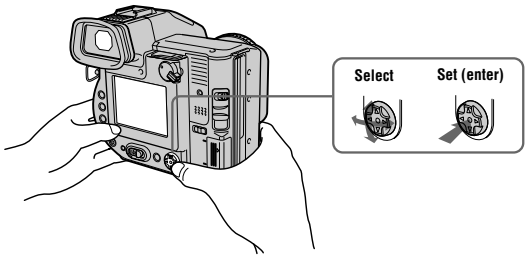
How to use the PLAY/STILL/MOVIE selector

The PLAY/STILL/MOVIE selector selects whether you can use your camera to record or play back and edit images. Set the selector as follows before starting to operate your camera.


PLAY
STILL
MOVIE
PLAY: To play back or edit images
STILL: To record still images, VOICE images and Clip Motion images
MOVIE: To record moving images

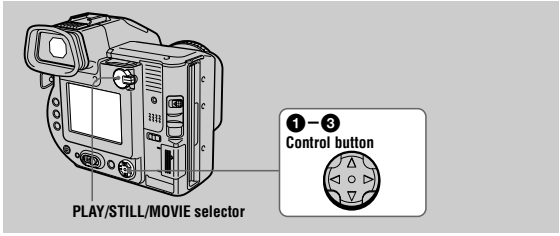
How to use the control button

The control button is used to select the buttons, images and menus displayed on the LCD screen or on the finder of your camera and modify the settings. The operation methods that are frequently used for "Advanced operations" are described below.



How to change the menu settings

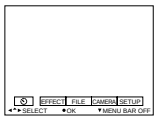
Some of the advanced operations for your camera are executed by selecting menu items displayed on the LCD screen or on the finder with the control button.



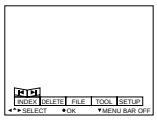
❶ Press ▲ on the control button to display the menu bar.

The menu bar appears as follows according to the position of the PLAY/STILL/MOVIE selector.

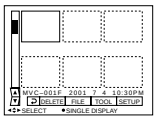
STILL/MOVIE



PLAY (single mode)



PLAY (INDEX mode)

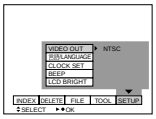


❷ Select the desired item with ▲/▼/◀/▶ on the control button, then press the center ●.

The color of the selected item changes from blue to yellow, and when you press the center ●, the settings that can be set for its item are displayed.

Note

The displayed items are changed according to the position of the MS/FD selector.



❸ Select the desired setting with ▲/▼/◀/▶ on the control button, then press the center ●.

To cancel the setup

Press ▼ on the control button repeatedly until the LCD screen or finder returns to the menu bar display in step ❶. To clear the menu bar, press ▼ again.

Menu settings

Menu items that can be modified differ depending on the positions of the PLAY/STILL/MOVIE selector or the MS/FD selector. The LCD screen or the finder shows only the items you can operate at the moment. Initial settings are indicated with ■.

(self-timer)

Records with the self-timer (page 23).

EFFECT

Item	Setting	Description	PLAY/STILL/MOVIE selector
P. EFFECT	SOLARIZE B&W SEPIA NEG.ART ■OFF	Sets the image special effects (page 60).	STILL MOVIE
DATE/TIME	DAY & TIME DATE ■OFF	Sets whether to insert the date and time into the image (page 60).	STILL

FILE

Item-1	Item-2	Setting	Description	PLAY/STILL/MOVIE selector
DISK TOOL (When the MS/FD selector is set to FD.)	FORMAT	OK	Formats a floppy disk (page 72). Once you format a floppy disk, all of the data, including protected images are deleted. Be sure to check for images before you format a floppy disk.	PLAY STILL MOVIE
		CANCEL	Cancels formatting of a floppy disk.	
	DISK COPY	OK	Copies all data stored in a floppy disk to another disk (page 70).	
		CANCEL	Cancels the disk copy.	
	CANCEL		Goes back to the [DISK TOOL] item.	

Item	Setting	Description	PLAY/STILL/MOVIE selector
FORMAT (When the MS/FD selector is set to MS.)	OK	Formats a “Memory Stick.” Once you format the “Memory Stick,” all of the data, including protected images are deleted. Be sure to check for images before you format a “Memory Stick.”	PLAY STILL MOVIE
	CANCEL	Cancels formatting of a “Memory Stick.”	
FILE NUMBER	SERIES	Assigns numbers to files in sequence even if the floppy disk or “Memory Stick” is changed. Note that file numbers are not in sequence between a floppy disk and “Memory Stick.”	STILL MOVIE
	■NORMAL	Resets the file number that starts from 001 or 0001 each time the floppy disk or “Memory Stick” is changed.	
CLIP MOTION		Sets the image size and number of frames for creating GIF format animation (page 49).	STILL
	160×120 (NORMAL)	Up to 10 frames can be recorded.	
	80×72 (MOBILE)	Up to 2 frames can be recorded.	
	CANCEL	Cancels Clip Motion.	
IMAGE SIZE (When the MS/FD selector is set to FD.)	■1600× 1200 1600 (3:2) 1600 (ECM) 1024×768 640×480	Selects the image size when recording still images.	STILL
IMAGE SIZE (When the MS/FD selector is set to MS.)	■1600 (FINE) 1600 (3:2) F 1024 (FINE) 640 (FINE)	Selects the image size when recording still images.	STILL
IMAGE SIZE	320×240 ■160×112	Selects the MPEG image size when recording moving images.	MOVIE

Item	Setting	Description	PLAY/STILL/MOVIE selector
REC MODE	TIFF	Records a TIFF (uncompressed) file in addition to the JPEG file when the MS/FD selector is set to MS.	STILL
	TEXT	Records a GIF file in black-and-white.	
	VOICE	Records an audio file (with a still image) in addition to the JPEG file.	
	E-MAIL	Records a small-size (320×240) JPEG file in addition to the selected image size.	
	■NORMAL	Records an image using the normal recording mode.	
REC TIME SET	15 sec 10 sec ■5 sec	Selects the recording time for moving images.	MOVIE
SLIDE SHOW (Only in PLAY (single) mode)	INTERVAL	Sets the slide show interval. ■3 sec/5 sec/10 sec/30 sec/1 min	PLAY
	REPEAT	A slide show can be repeated. (When using the floppy disk, a slide show is up to approx. 20 minutes) ■ON/OFF	
	START	Starts the slide show.	
	CANCEL	Cancels the slide show settings or execution.	
PRINT MARK	ON	Marks the still images to be printed (page 71).	PLAY
	■OFF	Unmarks the print mark of the still images.	
PROTECT	ON	Protects images against accidental erasure (page 65).	PLAY
	■OFF	Releases protection of images.	

CAMERA

Item	Setting	Description	PLAY/STILL/MOVIE selector
DIGITAL ZOOM	■ON	Uses digital zoom.	STILL
	OFF	Does not use digital zoom.	
SHARPNESS	+2 to –2	Adjusts the sharpness of the image. The ◫ indicator appears (except when the setting is 0).	STILL

Item	Setting	Description	PLAY/STILL/MOVIE selector
FLASH LEVEL	HIGH	Makes the flash level higher than normal.	STILL
	■NORMAL	Normal setting.	
	LOW	Makes the flash level lower than normal.	
EXPOSURE	+2.0EV to –2.0EV	Adjusts the exposure before recording.	STILL MOVIE

TOOL

Item	Setting	Description	PLAY/STILL/MOVIE selector
COPY (When the MS/FD selector is set to FD.)	FD → FD	Copies the image to a floppy disk.	PLAY
	FD → MS	Copies the image to a “Memory Stick.”	
	CANCEL	Cancels copying of the image (page 68).	
COPY (When the MS/FD selector is set to MS.)	MS → MS	Copies the image to a “Memory Stick.”	PLAY
	MS → FD	Copies the image to a floppy disk.	
	CANCEL	Cancels copying of the image (page 68).	
RESIZE (When the MS/FD selector is set to FD.)	1600× 1200 1024×768 640×480 CANCEL	Changes the recorded image size in PLAY (single) mode (page 67).	PLAY
RESIZE (When the MS/FD selector is set to MS.)	1600 (FINE) 1024 (FINE) 640 (FINE) CANCEL	Changes the recorded image size in PLAY (single) mode (page 67).	PLAY

SETUP

Item	Setting	Description	PLAY/STILL/MOVIE selector
DEMO	■STBY/ON OFF	Displayed only when you use the AC power adaptor in STILL or MOVIE mode. When [ON] is selected, a demonstration will start if you do not operate your camera for about 10 minutes. To stop the demonstration, turn off your camera.	STILL MOVIE

Item	Setting	Description	PLAY/STILL/ MOVIE selector
VIDEO OUT	NTSC	Sets the video output signal to NTSC mode (e.g., Japan, the USA).	PLAY STILL MOVIE
	PAL	Sets the video output signal to PAL mode (e.g., Europe).	
言語 / LANGUAGE	■ENGLISH	Displays the menu items in English.	PLAY STILL MOVIE
	日本語 /JPN	Displays the menu items in Japanese.	
CLOCK SET	—	Sets the date and time (page 14).	PLAY STILL MOVIE
BEEP	SHUTTER	Turns on the shutter sound only. (The shutter sound is heard when you press the shutter button.)	PLAY STILL MOVIE
	■ON	Turns on the beep/shutter sound (when you press the control button/shutter button).	
	OFF	Turns off the beep/shutter sound.	
LCD BRIGHT		Adjusts the LCD screen brightness using +/- on the LCD screen or on the finder.	PLAY STILL MOVIE

INDEX (Only in PLAY (single) mode)

Displays six images at a time (PLAY (INDEX) mode).

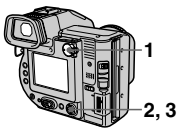
DELETE (Only in PLAY (single) mode)

Setting	Description	PLAY/STILL/MOVIE selector
OK	Deletes the displayed image.	PLAY
CANCEL	Cancels deleting of the image.	

↩ (Return) (Only in PLAY (INDEX) mode)

Returns to PLAY (single) mode.

Setting the image size (IMAGE SIZE)



1 Set the PLAY/STILL/MOVIE selector to STILL or MOVIE.

2 Select [FILE] and then [IMAGE SIZE] from the menu.

3 Select the desired image size.

Still image size:

- When the MS/FD selector is set to **FD**
  1600×1200, 1600 (3:2)*, 1600 (ECM), 1024×768, 640×480

  (ECM): The image quality deteriorates, however, the number of images you can record increases. If you give priority to the image quality, select [1600×1200].

- When the MS/FD selector is set to **MS**
  1600 (FINE), 1600 (3:2)F*, 1024 (FINE), 640 (FINE)

  (FINE): The quality of the image recorded in a "Memory Stick" is higher than the image recorded in a floppy disk even if the image size is same. Also, the file size recorded in a "Memory Stick" is larger than the file recorded in a floppy disk.

* The image is recorded in the ratio of three to two to fit the printing paper size. Using this image size, the margin of an image is not printed out. However, the slight amount of the upper and lower of the image being displayed on the LCD screen or on the finder is not recorded.

Moving image sizes:
320×240, 160×112

The number of images or the time that you can record on a floppy disk or "Memory Stick" (8 MB)

Image size	Number of images or time*	
	Floppy disk	"Memory Stick"
1600×1200	Approx. 4	Approx. 8
1600 (3:2)	Approx. 4	Approx. 8
1600 (ECM)	Approx. 8	—
1024×768	Approx. 10	Approx. 20
640×480	Approx. 30	Approx. 48
320×240	Approx. 15 sec	Approx. 80 sec (15 sec)**
160×112	Approx. 60 sec	Approx. 320 sec (60 sec)**

* When REC MODE is set to NORMAL.

** The maximum recording time in continuous recording

Notes

- If you try to record 55 images or more on a floppy disk, even if the remaining disk capacity is sufficient, "DISK FULL" appears on the LCD screen or on the finder and you cannot record any more images.
- If you try to record 3001 images or more on a "Memory Stick," even if the remaining memory capacity of the "Memory Stick" is sufficient, "NO MEMORY SPACE" appears on the LCD screen or on the finder and you cannot record any more images.
- In TEXT mode, even if you select [1600 (ECM)], the number of images you can record is equal with the number in [1600×1200].

Tips

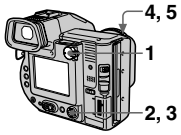
The size of the image is indicated by the pixel unit. The higher the number of pixels, the more information is included. So, an image that is saved using a large number of pixels is suitable for a large-format print and one that is saved using a smaller number of pixels is suitable for attaching to an E-mail. Normally, an image is recorded in the ratio of four to three to fit the monitor ratio. This camera can also record the image in the ratio of three to two to accommodate the most common printing paper size. This is the same ratio as the one used in photo-developing shops.

1600×1200

1600 (3:2)

Creating Clip Motion Files

Clip Motion is an animation function that plays back still images in succession. Clip Motion images are played back on this camera at approximately 0.5 s intervals. The images are stored in GIF format, which is convenient for creating home pages or attaching images to an e-mail.



1 Set the PLAY/STILL/MOVIE selector to STILL.

2 Select [FILE] and then [CLIP MOTION] from the menu.

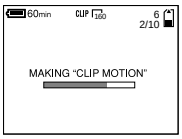
3 Select the desired mode.

160×120 (NORMAL)
Clip Motion of up to 10 frames can be recorded.
This is suitable for use on home pages, etc.

80×72 (MOBILE)
Clip Motion of up to 2 frames can be recorded.
This is suitable for use with portable data terminals.

CANCEL
This cancels the creation of Clip Motion.

4 Record the image for the first frame.



5 Record the image for the next frame.
Image recording can be repeated up to the maximum number of recordable frames.
The frame images are automatically recorded on the floppy disk or "Memory Stick" when you select [FINISH] or after recording the maximum number of frames.

To stop Clip Motion creation

Select [RETURN] after step **3**.
Note that if you record even one frame, you cannot stop Clip Motion creation.

The number of Clip Motion frames that you can record on a floppy disk or "Memory Stick" (8 MB)

Image size	Number of images	
	Floppy disk	"Memory Stick"
160×120 (NORMAL)	Approx. 7*	Approx. 40*
80×72 (MOBILE)	Approx. 54**	Approx. 400**

* When recording 10 frames per Clip Motion file

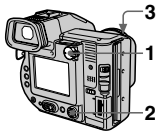
** When recording 2 frames per Clip Motion file

Notes

- Reading and writing data takes more time than normal image recording.
- Due to the limitations of the GIF format, the number of colors for Clip Motion images is reduced to 256 colors or less. Therefore, the picture quality may deteriorate for some images.
- The file size is reduced in MOBILE mode, so the picture quality deteriorates.
- GIF files not created on this camera may not be displayed correctly.

Recording still images for e-mail (E-MAIL)

The E-MAIL mode records a small-size (320×240) image at the same time as a still image. Small-size images are convenient for e-mail transmission, etc. Images in E-MAIL mode are recorded in the JPEG format.



1 Set the PLAY/STILL/MOVIE selector to STILL.

2 Select [FILE], [REC MODE], and then [E-MAIL] from the menu.

3 Record the image.

The number of images that you can record on a floppy disk or "Memory Stick" (8 MB) in E-MAIL mode

Image size	Number of images	
	Floppy disk	"Memory Stick"
1600×1200	Approx. 3	Approx. 8
1600 (3:2)	Approx. 3	Approx. 8
1600 (ECM)	Approx. 7	—
1024×768	Approx. 8	Approx. 20
640×480	Approx. 22	Approx. 44

To return to normal recording mode

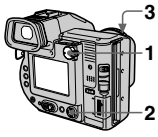
Select [NORMAL] in step **2**.

Notes

- If the subject is not evenly illuminated, you may be unable to record a clear image.
- Writing and reading data take more time than normal recording.

Adding audio files to still images (VOICE)

Images in VOICE mode are recorded in the JPEG format, and audio is recorded in the MPEG format.



1 Set the PLAY/STILL/MOVIE selector to STILL.

2 Select [FILE], [REC MODE], and then [VOICE] from the menu.

3 Record the image.
If you press and release the shutter button, sound is recorded for five seconds.
If you hold down the shutter button, sound is recorded until you release the shutter button for up to 40 seconds.

The number of images that you can record on a floppy disk or "Memory Stick" (8 MB) in VOICE mode

Image size	Number of images*	
	Floppy disk	"Memory Stick"
1600×1200	Approx. 3	Approx. 7
1600 (3:2)	Approx. 3	Approx. 7
1600 (ECM)	Approx. 5	—
1024×768	Approx. 6	Approx. 17
640×480	Approx. 12	Approx. 34

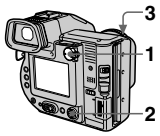
* When recording 5-second audio.

To return to normal recording mode

Select [NORMAL] in step **2**.

Recording text documents (TEXT)

Text is recorded in GIF format to provide a clear image.



1 Set the PLAY/STILL/MOVIE selector to STILL.

2 Select [FILE], [REC MODE], and then [TEXT] from the menu.

3 Record the image.

The number of images that you can record on a floppy disk or "Memory Stick" (8 MB) in TEXT mode

Image size	Number of images*	
	Floppy disk	"Memory Stick"
1600×1200	Minimum 4	Minimum 25
1600 (3:2)	Minimum 5	Minimum 28
1600 (ECM)	Minimum 4	—
1024×768	Minimum 11	Minimum 61
640×480	Minimum 28	Minimum 160

* The maximum number of recordable images depends on the document condition, such as the amount of text portions.

To return to normal recording mode

Select [NORMAL] in step **2**.

Notes

- If the subject is not evenly illuminated, you may be unable to record a clear image.
- Writing and reading data take more time than normal recording.

Recording still images as uncompressed files (TIFF)

This mode simultaneously records still images in both TIFF format (uncompressed) and JPEG format (compressed) **when using a "Memory Stick."**

1 Set the PLAY/STILL/MOVIE selector to STILL.

2 Set the MS/FD selector to MS.

3 Select [FILE], [REC MODE], and then [TIFF] from the menu.

4 Record the image.

The number of images that you can record on a "Memory Stick" (8 MB) in TIFF mode

Image size	Number of images
1600×1200	1
1600 (3:2)	1

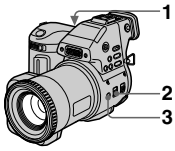
To return to normal recording mode

Select [NORMAL] in step **3**.

Notes

- JPEG images are recorded in the image size selected by the [IMAGE SIZE] menu (page 48). TIFF images are recorded in [1600×1200] size other than when [1600 (3:2)F] is selected.
- Writing data takes more time than in normal recording.

Recording images in macro



1 Set the PLAY/STILL/MOVIE selector to STILL or MOVIE.

2 Set the FOCUS AUTO/MANUAL switch to AUTO.

3 Press (macro).
The (macro) indicator appears on the LCD screen or on the finder. With the zoom lever set to the W side, you can shoot a subject that is about 2 cm (13/16 inch) away from the lens surface in macro mode.

To return to normal recording mode

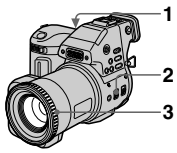
Press again. The indicator disappears.

Notes

- You cannot record images in macro with the following PROGRAM AE modes:
  —Landscape mode
  —Panfocus mode
- You cannot record images in macro if the indicator appears.

Focusing manually

Normally the focus is automatically adjusted. This function is useful when the auto focus does not work well such as in dark places.



1 Set the PLAY/STILL/MOVIE selector to STILL or MOVIE.

2 Set the FOCUS AUTO/MANUAL switch to MANUAL.
The MF (manual focus) indicator appears on the LCD screen or on the finder.

3 Turn the focus ring to achieve a sharp focus.
When you shoot still images, the image on the LCD screen or on the finder is enlarged (double*) and the focal point information appears while the focus is being adjusted. After adjusting, the image returns to normal size. The range is from 2 cm (13/16 inch) to ∞ (infinity).

* When using the digital zoom function, the enlarged image will be less than double size.

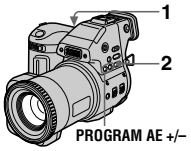
To reactivate auto focusing

Set the FOCUS AUTO/MANUAL switch to AUTO.

Notes

- Focal point information may not completely show the correct distance. Use the information as a guide.
- Focal point information does not show the correct distance when attaching the conversion lens.
- If you shoot a subject within 0.8 m (31 1/2 inches) while the zoom lever is set to T side, you cannot get a clear focus. In such cases, the focal point information flashes. Move the zoom lever to the W side until the indicator stops flashing.
- You cannot use this function if you have selected the Panfocus mode in the PROGRAM AE function.

Using the PROGRAM AE function



1 Set the PLAY/STILL/MOVIE selector to STILL or MOVIE.

2 Press PROGRAM AE repeatedly to select the desired PROGRAM AE mode.

AE A Aperture priority mode
For making the subject stand out against an unclear background or making both the subject and the background stand out clearly. Press PROGRAM AE +/– repeatedly to select an aperture value in 9 steps from F2.8 to F11.

AE S Shutter speed priority mode
For recording a sharp picture of a fast-moving subject or recording the flow of motion of a moving subject.
Press PROGRAM AE +/– repeatedly to select a shutter speed in 17 steps from 8" to 1/500 when recording a still image, or in 11 steps from 1/8 to 1/500 when recording a moving image.

Twilight mode
Suppresses the blurring of colors of a bright subject in a dark place so that you can record the subject without losing the dark atmosphere of the surroundings.

Twilight plus mode
Increases the effectiveness of the twilight mode function.

Landscape mode
Focuses only on a distant subject to record landscapes, etc.

Panfocus mode
Changes the focus quickly and simply from a close subject to a distant subject.

To cancel PROGRAM AE

Press PROGRAM AE repeatedly until the indicator on the LCD screen or on the finder goes out.

Notes

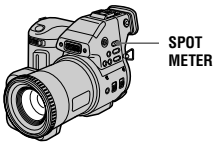
- You can focus only on distant subjects in Landscape mode.
- In Panfocus mode, the zoom position is set to the W side and focus is fixed.
- When you record in Twilight plus mode, we recommend that you use a tripod to prevent shaking.
- Set the forced flash ↯ when you use the flash in the following modes:
  – Twilight mode
  – Twilight plus mode
  – Landscape mode
- You cannot use the PROGRAM AE function when [REC MODE] is set to [TEXT].
- If the setting is not appropriate in aperture priority mode and shutter speed priority mode, the setting value indicator on the LCD screen or on the finder flashes. In this case, reset the value.

Tips

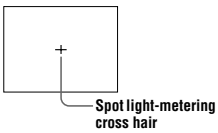
Under normal recording conditions, the camera automatically makes various adjustments, such as those for the focus, iris, exposure, and white balance, as it shoots. However, you may not be able to carry out your desired shooting depending on shooting conditions. The program AE function provides you with near-optimum adjustments to suit your shooting situation.

Using the Spot light-metering function

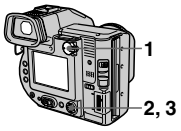
Select this mode when there is backlight or when there is strong contrast between the subject and the background, etc.



Press SPOT METER to activate the spot light-metering function. Position the point you want to record at the spot light-metering cross hair.



Adjusting the exposure (EXPOSURE)



1 Set the PLAY/STILL/MOVIE selector to STILL or MOVIE.

2 Select [CAMERA] and then [EXPOSURE] from the menu.

3 Select the desired exposure value.
Adjust the exposure value while checking the brightness of the background. You can select values ranging from +2.0 EV to -2.0 EV in steps of 1/3 EV.

Note

If a subject is under extremely bright or dark situations, or the flash is used, the exposure adjustment may not be effective.

Tips

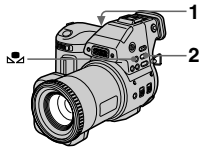
Normally, the camera automatically adjusts the exposure. If the color of the image is too dark or bright as illustrated below, we recommend that you adjust the exposure manually. When the color of the image is too dark, set it toward +, and when it is too bright, set it toward –.

Set the exposure toward +

Set the exposure toward –

Adjusting the white balance (WHITE BALANCE)

Normally the white balance is automatically adjusted.



1 Set the PLAY/STILL/MOVIE selector to STILL or MOVIE.

2 Press WHITE BALANCE repeatedly to select the desired white balance setting.

One-push white balance ( )
Adjusting the white balance depending on the light source

OUT DOOR ( )
Recording a sunrise/sunset, night scene, neon signs, or fireworks

IN DOOR ( )
- Places where the lighting condition changes quickly
- Under bright lighting such as photography studios
- Under sodium or mercury lamps

AUTO (No indicator)
Adjusts the white balance automatically

To shoot in one-push white balance mode

① Press WHITE BALANCE repeatedly until the indicator appears.

② Shoot a white object such as paper full under the same situation you will shoot.

③ Press .
The indicator flashes quickly. When the white balance has been adjusted and stored in the memory, the indicator stops flashing.

To reactivate auto adjustment

Select [AUTO] in step **2**.

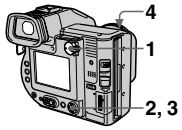
Note

- Select [AUTO] when shooting with fluorescent lighting.
- The indicator means:
  Slow flashing: white balance is not set.
  Quick flashing: white balance is being adjusted (after you pressed).
  Lit steady: white balance has been set.
- If the indicator keeps flashing even when you press , record in automatic white balance mode.

Tips

The image is susceptible to lighting conditions. The image looks blue under sunlight in the summer, and looks red under mercury lamps. Human eyes can resolve these problems. However, the camera cannot resolve the problem by making adjustments. Normally, the camera adjusts it automatically, but, if the image appears in strange colors, we recommend that you change the white balance mode.

Recording the date and time on the still image (DATE/TIME)



1 Set the PLAY/STILL/MOVIE selector to STILL.

2 Select [EFFECT] and then [DATE/TIME] from the menu.

3 Select the date and time.

DAY & TIME
Imposes the date, hour, and minute.

DATE
Imposes the year, month, and day.

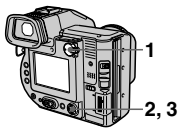
OFF
Does not impose the date and time.

4 Record the image.
The date and time do not appear on the LCD screen or on the finder during shooting. These appear during playback only.

Notes

- If you select [DATE] in step **3**, the date is imposed onto the image in the order selected with "Setting the date and time" (page 14).
- The date and time are not imposed onto Clip Motion images.

Enjoying picture effects (PICTURE EFFECT)



1 Set the PLAY/STILL/MOVIE selector to STILL or MOVIE.

2 Select [EFFECT] and then [P. EFFECT] from the menu.

3 Select the desired mode.

SOLARIZE
The light contrast is clearer and the picture looks like an illustration.

B&W
The picture is monochrome (black and white).

SEPIA
The picture is sepia-toned like an old photograph.

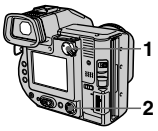
NEG.ART
The color and brightness of the picture are reversed as in a negative.

OFF
Does not use the picture effect function.

To cancel picture effect

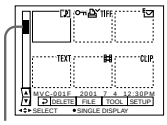
Select [OFF] in step **3**.

Playing back six images at once (INDEX)



1 Set the PLAY/STILL/MOVIE selector to PLAY.

2 Select [INDEX] on the LCD screen or on the finder.
Six images are displayed at once (index screen).
Only the first frame of Clip Motion files is displayed.



This shows the position of the currently displayed images relative to all the recorded images.

The following marks are displayed on each image according to the image type and settings.
: Moving image file
: VOICE mode file
: E-mail file
: Print mark
: Protect mark
TEXT: TEXT file
TIFF: TIFF file
CLIP: Clip Motion file
(No mark): Normal recording (no settings)

To display the next (previous) index screen

Select ▲/▼ at the lower-left on the LCD screen or on the finder.

Displays the previous index screen.
Displays the next index screen.

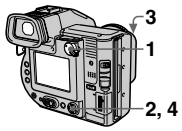
To return to normal playback (single image)

- Select the desired image with the control button.
- Select (Return).

Note

When viewing an image recorded in Clip Motion or TEXT mode on the INDEX screen, the image may appear different from the actual image.

Enlarging a part of the still image (Zoom and trimming)



1 Set the PLAY/STILL/MOVIE selector to PLAY.

2 Display the image to be enlarged.

3 Zoom in/out the image with the zoom lever.
The zoom scaling indicator appears on the LCD screen or on the finder.

4 Press the control button repeatedly to select the desired portion of the image.
▲: The image moves downward
▼: The image moves upward
◀: The image moves rightward
▶: The image moves leftward

To return to the normal size

Zoom out with the zoom lever until the zoom scaling indicator (×1.1) disappears from the screen, or simply press the center ●.

To record an enlarged image (trimming)

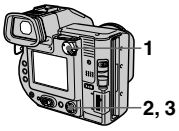
① Enlarge the image.
② Press the shutter button. The image is recorded at 640×480 size and the image on the LCD screen or on the finder returns to the normal size after recording.

Notes

- You cannot trim moving images, still images recorded in Clip Motion, TEXT mode, or uncompressed images.
- Zoom scaling is up to 5× regardless of the original image size.
- The quality of enlarged images may be deteriorated.
- The original data is left even if you enlarge the image.
- The enlarged image is recorded as the newest file.

Playing back the still images in order (SLIDE SHOW)

This function is useful for checking the recorded images or for presentations, etc.



1 Set the PLAY/STILL/MOVIE selector to PLAY.

2 Select [FILE] and then [SLIDE SHOW] from the menu.
Set the following items.

INTERVAL
You can select from 1 min (one minute), 30 sec (30 seconds), 10 sec (10 seconds), 5 sec (5 seconds), or 3 sec (3 seconds).

REPEAT
ON: Plays back images in a continuous loop (When using the floppy disk, the slide show stops approximately 20 minutes*) until [RETURN] is selected.
OFF: After all images have been played back, the slide show ends.

* The slide show does not end until all the images are played back, even if it takes more than 20 minutes.

3 Select [START].
The slide show begins.

To cancel the slide show

Select [CANCEL] in step **2** or **3**.

To skip to the next/previous image during the slide show

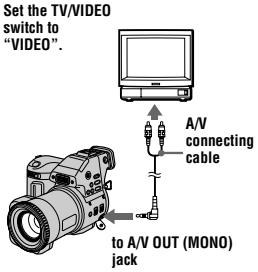
Select ⏮/⏭ at the lower-left on the LCD screen or on the finder.

Note

The interval setting time may vary depending on the image size.

Viewing images on a TV screen

Before connecting your camera, be sure to turn off the TV.



1 Connect the A/V connecting cable to the A/V OUT (MONO) jack of your camera and to the audio/video input jacks of the TV.
If your TV has stereo type input jacks, connect the audio plug of the A/V connecting cable to the Lch jack.

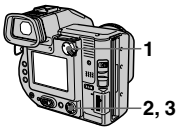
2 Turn on the TV and start playback on your camera.
The playback image appears on the TV screen.

Note

You cannot use a TV that has an antenna (aerial) connector only.

Preventing accidental erasure (PROTECT)

The 🔑 (protect) indicator appears on protected images.



In single mode

1 Set the PLAY/STILL/MOVIE selector to PLAY, then display the image to be protected.

2 Select [FILE], [PROTECT], and then [ON] from the menu.
The displayed image is protected and the 🔑 indicator appears.

To release protection

Select [OFF] in step **2**.

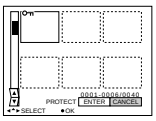
In INDEX mode

1 Set the PLAY/STILL/MOVIE selector to PLAY, then display the INDEX screen.

2 Select [FILE], [PROTECT], and then [ALL] or [SELECT] from the menu.

3 When you select [ALL]
Select [ON].
All the images in the floppy disk or "Memory Stick" are protected.

When you select [SELECT]
Select all the images to be protected with the control button, then select [ENTER]. The selected images are protected.

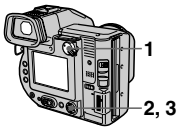


To release protection

If you selected [ALL] in step **2**, select [OFF]. If you selected [SELECT] in step **2**, select the images to be unprotected with the control button, then select [ENTER].

Deleting images (DELETE)

Protected images cannot be deleted.



In single mode

1 Set the PLAY/STILL/MOVIE selector to PLAY, then display the image to be deleted.

2 Select [DELETE] and then [OK] from the menu.
The image is deleted.

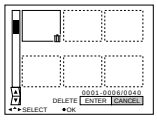
In INDEX mode

1 Set the PLAY/STILL/MOVIE selector to PLAY, then display the INDEX screen.

2 Select [DELETE] and then [ALL] or [SELECT] from the menu.

3 When you select [ALL]
Select [ENTER].
All the unprotected images are deleted.

When you select [SELECT]
Select all the images to be deleted with the control button, then select [ENTER]. The 🗑 (delete) indicator appears on the selected images and these images are deleted.



To cancel deleting

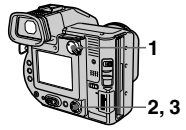
Select [CANCEL] in step **2** or **3**.

Note

If there are files on the "Memory Stick" with names having the same last 4 digits as the file name of the image to be deleted, these files are also deleted at the same time.

Changing the recorded still image size (RESIZE)

Use this function when you need a small-size image to attach it to an E-mail. The original image is retained even after resizing. The resized image is recorded as the newest file.



1 Set the PLAY/STILL/MOVIE selector to PLAY, then display the image of which you want to change the size.

2 Select [TOOL] and then [RESIZE] from the menu.

3 Select the desired size.

- When the MS/FD selector is set to **FD**
  1600×1200, 1024×768, 640×480.
- When the MS/FD selector is set to **MS**
  1600 (FINE), 1024 (FINE), 640 (FINE).

The resized image is recorded, then the display returns to the image display before resizing.

To cancel changing the size

Select [CANCEL] in step **3**.

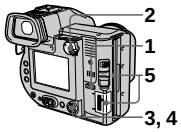
Notes

- You cannot change the size of images recorded in TEXT mode, moving images, uncompressed images, or Clip Motion images.
- When you change from a small size to a large size, the picture quality deteriorates.

Copying images (COPY)

Copies images to another floppy disk or "Memory Stick."

In single mode



1 Select the media using the MS/FD selector.

2 Set the PLAY/STILL/MOVIE selector to PLAY, then display the image to be copied.

3 Select [TOOL], and then [COPY] from the menu.

4 Select the media that the image will be copied onto.

- When the MS/FD selector is set to **FD**.
  FD → FD: Copies to the floppy disk
  FD → MS: Copies to the "Memory Stick"
- When the MS/FD selector is set to **MS**.
  MS → MS: Copies to the "Memory Stick"
  MS → FD: Copies to the floppy disk

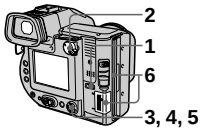
When you select [FD → MS] or [MS → FD], the camera automatically starts copying if the floppy disk and "Memory Stick" are inserted.

5 Insert or change the floppy disk or "Memory Stick" following the messages on the LCD screen or on the finder.
"RECORDING" appears. When copying is completed, "COMPLETE" appears.
To end copying, select [EXIT].

To continue copying the image to other floppy disks or "Memory Stick"s

After "COMPLETE" appears in step **5**, select [CONTINUE] and repeat step **5** above.

In INDEX mode



1 Select the media using the MS/FD selector.

2 Set the PLAY/STILL/MOVIE selector to PLAY, then display the INDEX screen.

3 Select [TOOL], and then [COPY] from the menu.

4 Select the media that the image will be copied onto.

- When the MS/FD selector is set to **FD**.
  FD → FD: Copies to the floppy disk
  FD → MS: Copies to the "Memory Stick"
- When the MS/FD selector is set to **MS**.
  MS → MS: Copies to the "Memory Stick"
  MS → FD: Copies to the floppy disk

5 When you select [ALL]*
Select [OK].

* [ALL] can be selected only when selecting [FD → FD] or [FD → MS].

When you select [SELECT]**
Select all the images to be copied with the control button. The ✓ mark appears on the selected images and then select [ENTER].

** When selecting [MS → FD], the necessary number of floppy disks appears after selecting [ENTER]. Select [OK] again.

6 Insert or change the floppy disk or "Memory Stick" following the messages on the LCD screen or on the finder.
"RECORDING" appears. When copying is completed, "COMPLETE" appears.
To end copying, select [EXIT].

To continue copying the image to other floppy disks or "Memory Stick"s

After "COMPLETE" appears in step **6**, select [CONTINUE] and repeat step **6**.

When selecting [MS → FD], if the amount of total images that will be copied is too large to copy to one floppy disk, the images will be copied using multiple floppy disks.

To cancel copying partway

Select [CANCEL].

Notes

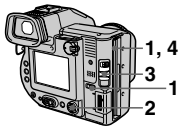
- You cannot copy uncompressed images.
- You cannot copy the image that is bigger than 1.4 MB.
- You cannot copy the images that the total amount of the images is bigger than 1.4 MB. If "NOT ENOUGH MEMORY" appears or ✓ flashes on the INDEX screen, cancel some images to copy and try again.
- If you eject and insert the floppy disk or "Memory Stick" without selecting [EXIT] after "COMPLETE" appears, the image will be copied.
- The number of floppy disks that is needed for copying is as a guide, which is displayed when selecting [MS → FD].

Copying all the information on your floppy disk (DISK COPY)

You can copy to another disk not only the images you have recorded with your camera but also various files you have created in other software with your computer.

Notes

- Once you carry out DISK COPY, all information saved on the recipient floppy disk is erased to be replaced by newly written data including the protected image data. Check the contents of the recipient disk before copying the disk.
- Be sure to use the floppy disk that has been formatted by this camera to carry out DISK COPY (page 72).



1 Set the MS/FD selector to FD, then insert the floppy disk to be copied.

2 Select [FILE], [DISK TOOL], [DISK COPY], and then [OK] from the menu.
"DISK ACCESS" appears.

3 When "CHANGE FLOPPY DISK" is displayed, eject the floppy disk.
"INSERT FLOPPY DISK" appears.

4 Insert another floppy disk.
"RECORDING" appears. When copying is completed, "COMPLETE" appears.
To end copying, select [EXIT].

To continue copying to other floppy disks

After "COMPLETE" appears in step **4**, select [CONTINUE] and repeat steps **3** and **4** above.

To cancel copying partway

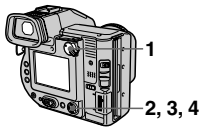
Select [CANCEL].

Note

If you eject and insert the floppy disk without selecting [EXIT] after "COMPLETE" appears, DISK COPY will be carried out onto the floppy disk.

Selecting still images to print (PRINT MARK)

You can mark a print mark on still images recorded with your camera. This mark is convenient when you have images printed at a shop that conforms with the DPOF (Digital Print Order Format) standard.



In single mode

1 Set the PLAY/STILL/MOVIE selector to PLAY and display the image you want to print.

2 Select [FILE], [PRINT MARK], and then [ON] from the menu.
The 🖶 (print) mark is marked on the displayed image.

To unmark the print mark

Select [OFF] in step **2**.

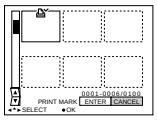
In INDEX mode

1 Set the PLAY/STILL/MOVIE selector to PLAY, then display the INDEX screen.

2 Select [FILE], [PRINT MARK], and then [SELECT] from the menu.

3 Select the images to be marked with the control button.

4 Select [ENTER].
The 🖶 marks on the selected images change from green to white.



To unmark selected print marks

Select the images to be unmarked in step **3** with the control button, then select [ENTER].

To unmark all the print marks

Select [FILE], [PRINT MARK], [ALL], and then [OFF] from the menu. The 🖶 marks on all images are unmarked.

To print out using the FVP-1 Mavica Printer

Set PRESET SELECT SW to PC on the printer.

Notes

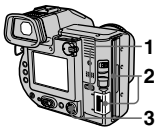
- You cannot mark moving images, Clip Motion images or images recorded in TEXT mode.
- If you mark an image recorded in TIFF mode with a print mark, only the uncompressed image is printed, and the JPEG image recorded at the same time is not printed.

Format

When you format a floppy disk or "Memory Stick," all data stored on the floppy disk or "Memory Stick" will be deleted. Check the contents of the floppy disk or "Memory Stick" before formatting.

Note

Even if images are protected, these images will be deleted.



1 Select the floppy disk or "Memory Stick" using the MS/FD selector.

2 Insert only the floppy disk or "Memory Stick" you want to format.
Be sure to insert only the media you want to format.

3 Select [FILE] from the menu.
- When formatting **a floppy disk**
  Select [DISK TOOL], [FORMAT], and then [OK] from the menu.
- When formatting **a "Memory Stick"**
  Select [FORMAT], and then [OK] from the menu.

To cancel formatting

Select [CANCEL] in step **3**.

Notes

- **Format the floppy disk or "Memory Stick" only using this camera. You cannot format the floppy disk or "Memory Stick" using a computer via the USB cable.**
- When you format, be sure to use a fully charged battery pack or the AC power adaptor as the power source.

Using the camera as an external drive of a computer

Once you connect the camera to a computer using the USB cable, you can use the camera as a floppy disk/ "Memory Stick" drive of a computer. Install the USB driver to the computer beforehand (page 31).

For Windows 98, Windows 98SE, Windows Me, and Windows 2000 Professional Users

1 Connect the camera to the computer using the supplied USB cable.

2 Select the drive type using the MS/FD selector on this camera.
When used as the floppy disk drive, set the MS/FD selector to FD.
When used as the "Memory Stick" drive, set the MS/FD selector to MS.

3 Connect the AC power adaptor and turn on the camera.

4 Open "My Computer" on Windows and check the icon "Removable Disk," then use the camera as an external drive.

Note

When using Windows Me or Windows 2000 Professional, see also page 34.

Precautions

On cleaning

Cleaning the LCD screen or finder
Wipe the screen surface with a cleaning cloth (not supplied) or an LCD cleaning kit (not supplied) to remove fingerprints, dust, etc.

Cleaning the camera surface
Clean the camera surface with a soft cloth slightly moistened with water, then wipe the surface dry. Do not use any type of solvent such as thinner, alcohol or benzene as this may damage the finish or the casing.

After using your camera at the seashore or other dusty locations
Clean your camera carefully. Otherwise, the salty air may corrode the metal fittings or dust may enter the inside of your camera, causing a malfunction.

On floppy disks

To protect data recorded on floppy disks, note the following:
- Avoid storing floppy disks near magnets or magnetic fields such as those of speakers and televisions. Otherwise, permanent erasure of disk data may result.
- Avoid storing floppy disks in areas subject to direct sunlight or sources of high temperature, such as a heating device. Floppy disk warping or damage may result, rendering the disk useless.
- Avoid contact with the disk's surface by opening the disk shutter plate. If the disk's surface becomes blemished, data may be rendered unreadable.
- Avoid getting liquids on the floppy disk.
- Be sure to use a floppy disk case to ensure protection of important data.
- Even when you use a 3.5 inch 2HD floppy disk, image data may not be recorded and/or displayed depending on the using environment. In this case, use a disk of other brand.

On operating temperature

Your camera is designed for use between the temperatures of 0°C to 40°C (32°F to 104°F). Recording in extremely cold or hot places that exceed this range is not recommended.

On moisture condensation

If the camera is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside or outside the camera. Should this occur, the camera will not operate properly.

Moisture condensation occurs easily when:
- The camera is brought from a cold location such as a ski slope into a warmly heated room.
- The camera is taken from an air-conditioned room or car interior to the hot outdoors, etc.

How to prevent moisture condensation
When bringing the camera from a cold place to a warm place, seal the camera in a plastic bag and allow it to adapt to conditions at the new location over a period of time (about an hour).

If moisture condensation occurs
Immediately eject the floppy disk, then turn off the camera and wait about an hour for the moisture to evaporate. Note that if you attempt to record with moisture remaining inside the lens, you will be unable to record clear images.

On AC power adaptor

- Unplug the unit from the wall outlet (mains) when you are not using the unit for a long time. To disconnect the power cord (mains lead), pull it out by the plug. Never pull the power cord (mains lead) itself.
- Do not operate the unit with a damaged cord (mains lead) or if the unit has been dropped or damaged.
- Do not bend the power cord (mains lead) forcibly, or place a heavy object on it. This will damage the cord (mains lead) and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM receivers and video equipment disturb AM reception and video operation.
- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  — Extremely hot or cold
  — Dusty or dirty
  — Very humid
  — Vibrating

On battery pack

- Use only the specified charger with the charging function.
- To prevent accident from a short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight.
- Keep the battery pack dry.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Attach the battery pack to the camera securely.
- Charging while some capacity remains does not affect the original battery capacity.

On the built-in rechargeable lithium battery

Your camera is supplied with a built-in rechargeable lithium battery installed so as to retain the date and time, etc., regardless of the setting of the POWER switch. The built-in rechargeable lithium battery is always charged as long as you are using your camera. The battery, however, will get discharged gradually if you do not use your camera. It will be completely discharged in about six months if you do not use your camera at all. Even if the built-in rechargeable lithium battery is not charged, it will not affect the camera operation. To retain the date and time, etc., charge the battery if the battery is discharged.

Charging the built-in rechargeable lithium battery:
- Connect your camera to house current (mains) using the AC power adaptor supplied with your camera, and leave your camera with the power turned off for more than 24 hours.
- Or install the fully charged battery pack in your camera, and leave your camera with the power turned off for more than 24 hours.

If any problem occurs, unplug your camera and contact your nearest Sony dealer.

On “Memory Sticks”

“Memory Stick” is a new compact, portable and versatile IC recording medium with a data capacity that exceeds a floppy disk. “Memory Stick” is specially designed for exchanging and sharing digital data among “Memory Stick” compatible products. Because it is removable, “Memory Stick” can also be used for external data storage.

There are two types of “Memory Sticks”: general “Memory Sticks” and “MagicGate Memory Sticks” that are equipped with the MagicGate* copyright protection technology. You can use both types of “Memory Stick” with your camera. However, because your camera does not support the MagicGate standards, data recorded with your camera is not subject to MagicGate copyright protection.

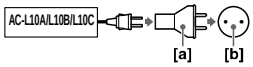
* MagicGate is copyright protection technology that uses encryption technology.

Notes
- Do not remove the “Memory Stick” while reading or writing data.
- Data may be damaged if:
  —you remove the “Memory Stick” or turn off your camera while reading or writing data.
  —you use the “Memory Stick” in a location subject to the effects of static electricity or noise.
- Do not attach any other material than the supplied label on the labeling position.
- When you carry or store the “Memory Stick,” put it in its supplied case.
- Do not touch the terminals of a “Memory Stick” with your hand or a metal object.
- Do not strike, bend or drop the “Memory Stick.”
- Do not disassemble or modify the “Memory Stick.”
- Do not allow the “Memory Stick” to get wet.

“Memory Stick”, “MagicGate Memory Stick” and are trademarks of Sony Corporation. “MagicGate” and MAGICGATE are trademarks of Sony Corporation.

Using your camera abroad

Power sources
You can use your camera in any country or area with the supplied battery charger within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet (mains) **[b]**.



Watching the playback picture on TV
If you want to view the playback picture on a TV, you need a TV having a video input jack and a video connecting cable.
The color system of the TV must be the same as that of your digital still camera. Check the following list:

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Columbia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, Czech Republic, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

About “InfoLITHIUM” battery pack

What is the “InfoLITHIUM” battery pack?
The “InfoLITHIUM” battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camera and the AC power adaptor.
The “InfoLITHIUM” battery pack calculates the power consumption according to the operating conditions of your camera, and displays the remaining battery time in minutes.

Charging the battery pack
- Be sure to charge the battery pack before you start using your camera.
- We recommend charging the battery pack in an ambient temperature of between 10°C to 30°C (50°F to 86°F) until the POWER ON/OFF (CHG) lamp goes out, indicating that the battery pack is fully charged. If you charge the battery pack outside of this temperature range, you may not be able to efficiently charge the battery pack.
- After charging is completed, either disconnect the AC power adaptor from the DC IN jack on your camera or remove the battery pack.

Effective use of the battery pack
- Battery performance decreases in low-temperature surroundings. So, the time that the battery pack can be used is shorter in cold places. We recommend the following to use the battery pack longer:
  — Put the battery pack in a pocket close to your body to warm it up, and insert it in your camera immediately before you start taking shots.
  — Use the large capacity battery pack (NP-F550, optional).
- Frequently using the LCD panel or frequently operating the zoom wears out the battery pack faster. We recommend using the large capacity battery pack (NP-F550, optional).
- Be certain to turn the POWER switch to off when not taking shots or playing back on your camera.
- We recommend have spare batteries handy for two or three times the expected shooting time, and make a trial shots before taking the actual shots.
- Do not expose the battery pack to water. The battery pack is not water-resistant.

Remaining battery time indicator
- If the power goes off although the battery remaining indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again so that the indication on the battery remaining indicator is correct. Note, however, that the correct battery indication sometimes will not be restored if it is used in high temperatures for a long time or left in a fully charged state, or the battery pack is frequently used. Regard the remaining battery time indication as the approximate shooting time.
- The mark indicating there is little remaining battery time sometimes flashes depending on the operating conditions or ambient temperature and environment even if the remaining battery time is 5 to 10 minutes.

How to store the battery pack
- Even if the battery pack is not used for a long time, store it in a dry, cool place after fully charging it once per year and then using the battery pack up on your camera. This is to maintain the battery pack’s functions.
- To use the battery pack up on your camera, leave the POWER switch to on in PLAY mode until the power goes off without a floppy disk or a “Memory Stick” inserted.

Battery life
- The battery life is limited. Battery capacity decreases little by little as you use it more and more, and as time passes. When the battery operating time is shortened considerably, a probable cause is that the battery pack has reached the end of its life. Please buy a new battery pack.
- The battery life varies according to how it is stored and operating conditions and environment for each battery pack.

Troubleshooting

If you experience trouble with your camera, first check the following items. Should your camera still not operate properly after you have made these checks, consult your Sony dealer or local authorized Sony service facility. **If code displays (C:□□:□□) appear on the LCD screen or on the finder, the self-diagnosis display function is working (page 87).**

Symptom	Cause and/or Solution
Your camera does not work.	• You are not using an "InfoLITHIUM" battery pack. →Use an "InfoLITHIUM" battery pack (page 9). • The floppy disk is not inserted properly. →Eject the disk, and insert it again (page 16). • The battery level is too low. (The indicator appears.) →Charge the battery pack fully (page 10). • The AC power adaptor is not connected securely. →Connect it securely to the DC IN jack and a wall outlet (mains) (page 10, 13). • The malfunction occurs inside the camera. →Turn off the power, and turn on after one minute, then check that the camera works properly.
Your camera cannot record images.	• The PLAY/STILL/MOVIE selector is set to PLAY. →Set it to STILL or MOVIE (pages 18, 25). • No floppy disk is inserted into your camera. →Insert a floppy disk (page 16). • The tab on the disk is set to the unrecordable position. →Set it to the recording position (page 16). • No "Memory Stick" is inserted into your camera. →Insert a "Memory Stick" (page 17). • The write-protect switch on the "Memory Stick" is set to LOCK. →Set it to the recording position.
The picture is out of focus.	• Your camera is not in macro recording mode when you shoot a subject that is about 3 to 25 cm (1 3/16 to 9 7/8 inches) away from the lens. →Set the macro recording mode (page 54). →Move the zoom lever to the W side.
The resizing function does not work.	• You cannot resize moving images, text images, Clip Motion images, and uncompressed images.

Symptom	Cause and/or Solution
You cannot display a print mark.	• You cannot display print marks on moving images, text images and Clip Motion images.
The picture is noisy.	• Your camera is placed near a TV or other equipment that uses strong magnets. →Move your camera away from the TV, etc.
The picture is too dark.	• You are shooting a subject with a light source behind the subject. →Adjust the exposure (page 58). • The brightness of the LCD screen is too low. →Adjust the brightness of the LCD screen (page 20).
The flash does not work.	• The flash is set to . →Set the flash to (no indication), , or (page 23). • The camera is in one of the following PROGRAM AE modes: Twilight, Twilight plus, or Landscape. →Cancel the PROGRAM AE function or set the flash to (page 23, 56). • The PLAY/STILL/MOVIE selector is set to MOVIE. →Set it to STILL. • The flash is not popped up. →Pop up the flash (page 23).
The date and time are recorded incorrectly.	• The date and time are not set correctly. →Set the correct date and time (page 14).
Vertical streaks appear when you are shooting a very bright subject.	• This is called the smear phenomenon. →This is not a malfunction.
The zoom does not work.	• PROGRAM AE is set to the Panfocus mode. →Cancel the Panfocus mode (page 56).
Digital zoom does not function.	• You cannot use digital zoom when recording moving pictures. • Digital zoom is set to [OFF]. →Set digital zoom to [ON] at the menu.
The image is in monochrome.	• You shot the image in TEXT mode. →Cancel the TEXT mode (page 52). • The picture effect is set to B&W. →Cancel the B&W mode (page 60).
The image cannot be played back on a computer.	→Consult the computer or software manufacturer.

Symptom	Cause and/or Solution
The image and sound break off when you play back an image on a computer.	• You are playing back the file from the floppy disk or "Memory Stick." →Copy the file to the hard disk of the computer and then play back the file from the hard disk (pages 29, 34).
Your camera cannot delete an image.	• The image is protected. →Cancel the protection (page 65).
The power turns off suddenly.	• With the PLAY/STILL/MOVIE selector set to STILL or MOVIE, if you do not operate the camera for about three minutes while the power is on, the camera turns off automatically to prevent wearing down the battery pack. →Turn on the camera. • The battery pack is discharged. →Replace it with a fully charged battery pack.
The image does not appear on the TV screen.	• The VIDEO OUT setting of your camera is incorrect. →Change the setting (page 47).
The slide show function stops automatically.	• The slide show function stops after about 20 minutes when using a floppy disk. →To continue the slide show, select [START] again (page 63).
You cannot use the PROGRAM AE function.	• The camera is set to TEXT mode. →Cancel the TEXT mode (page 52).
The macro function does not work.	• The camera is in manual focus mode. →Set it to auto focus mode (page 55). • PROGRAM AE is set to the Panfocus mode. →Cancel the Panfocus mode (page 56).

Symptom	Cause and/or Solution
Your computer does not recognize your camera.	• The battery level is low. →Use the AC power adaptor (page 13). • The camera is turned off. →Turn on the camera. • The USB cable is not connected firmly. →Disconnect the USB cable, and connect it again firmly. Make sure that "USB MODE" is displayed on the LCD screen or on the finder (page 31). • The USB connectors on your computer are connected to other equipment besides the keyboard, the mouse, and your camera. →Disconnect the USB cables except for the ones connected to the keyboard, the mouse, and your camera. • The position of the MS/FD selector is not set to the proper position for the media being used. →Set the MS/FD selector to the proper position. • The USB driver is not installed. →Install the USB driver (page 31). • **For Windows 98, Windows 98SE, Windows Me and Windows 2000 Professional users** Since the camera is connected to a computer with the USB cable before installing the USB driver, the drive is not recognized properly by the computer. →Delete the drive which is not recognized properly, then install the USB driver. For details, see the procedure below.

Reinstall the USB driver when using Windows 98, Windows 98SE, Windows Me and Windows 2000 Professional

1 Turn on your computer and allow Windows to load.

2 Connect the USB jack on the camera and the computer with the supplied USB cable.

3 Insert a media and set the MS/FD selector to the appropriate position according to the media inserted.

4 Connect the AC power adaptor to your camera and then to a wall outlet (mains), and turn on the power of your camera.

5 Open “Device Manager” on Windows.

For Windows 98, Windows 98SE and Windows Me users:

① Open [Control Panel] from [My Computer], then double-click [System].

② System properties is displayed. Click the [Device Manager] tab located at the top.

③ Click [SonyDSC] in [Other devices], then click the [Delete (E)] button located at the lower-right corner.

For Windows 2000 Professional users:

* Log in with the permission of administrator.

① Open [Control Panel] from [My Computer], then double-click [System].

② System properties is displayed. Click the [Hardware] tab located at the top, then click the [Device Manager (D)] button.

③ Click [View] in [Device Manager], then click [Devices by type (E)].

④ Right-click [SonyDSC] in [Other devices], then click [Delete (E)].

6 After the message appears to verify that you delete the device manager, click the [OK] button.

7 Turn off the camera, disconnect the USB cable, and restart the computer.

8 Install the USB driver in the supplied CD-ROM to the computer following the procedure on page 31. Perform all steps without skipping.

Battery packs

Symptom	Cause and/or Solution
The battery pack cannot be charged.	• The power of the camera is turned on. →Turn off the power of the camera (page 10).
The battery life is short.	• You are recording/playing back images under extremely cold temperatures. • The battery pack is not charged enough. →Charge the battery pack fully. • The battery pack is dead. →Replace the battery pack with a new one.

Symptom	Cause and/or Solution
The indication of the battery remaining time is not proper, or the power is immediately turned off even if the battery remaining indicator indicates that the battery level is sufficient.	• You are using the camera for many hours under extremely hot or cold temperatures. • The battery pack is dead. →Replace the battery pack with a new one (page 9). • The battery level is too low. →Install the fully charged battery pack (page 9, 10). • A deviation has occurred in the remaining battery time. →Charge the battery pack fully (page 10).
The POWER ON/OFF (CHG) lamp flashes when charging a battery pack.	• A malfunction has occurred in the battery pack. →Contact your Sony dealer or local authorized Sony service facility.
The POWER ON/OFF (CHG) lamp does not light up when charging a battery pack.	• The AC power adaptor is not connected. →Connect the power cord firmly to a wall outlet (mains) (page 10). • The battery pack is not installed properly. →Install it properly (page 9). • Charging of the battery pack is complete.

Warning and notice messages

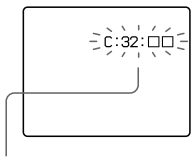
Various messages appear on the LCD screen or on the finder. Check the corresponding descriptions in the following list.

Message	Meaning
DRIVE ERROR	There is trouble with the disk drive.
SYSTEM ERROR	Turn the power off and on again.
NO DISK	No disk is inserted.
NO MEMORY STICK	No “Memory Stick” is inserted.
FORMAT ERROR	• The floppy disk loaded is not MS-DOS formatted (512 bytes×18 sectors). • Failed to format the “Memory Stick.” • The Floppy Disk Adaptor for Memory Stick is inserted.
MEMORY STICK ERROR	The inserted “Memory Stick” cannot be used with your camera, or the “Memory Stick” is damaged or not inserted correctly.
DISK PROTECT	The tab on the disk is set to the unrecordable position.
MEMORY STICK LOCKED	The write-protect switch on the “Memory Stick” is set to the LOCK position.
DISK FULL	The disk is full.
NO MEMORY SPACE	The capacity of the “Memory Stick” is not sufficient to record images.
NO FILE	No image is recorded on the disk.
FILE ERROR	Trouble has occurred during playback.
FILE PROTECT	The image is protected.
DISK ERROR	A 2DD floppy disk is inserted, or there is trouble with the disk.
DIRECTORY ERROR	A directory with the same name already exists.
NOT ENOUGH MEMORY	The remaining capacity of the floppy disk or “Memory Stick” is not enough to copy the image.
IMAGE SIZE OVER	You tried to play back images with an image size larger than the maximum playback size of this camera.

Message	Meaning
INVALID OPERATION	You are playing back a file that was created on equipment other than your camera.
for “InfoLITHIUM” battery only	The battery is not the “InfoLITHIUM” type.
	The image is protected.
	The battery level is too low. When the remaining time is about 5 to 10 minutes, may flash depending on the battery pack used, operating conditions, or the environment.

Self-diagnosis display

Your camera has a self-diagnosis display. This function displays the camera condition on the LCD screen or on the finder with a combination of a letter and four digits of numbers. If this appears, check the following code chart. The code informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



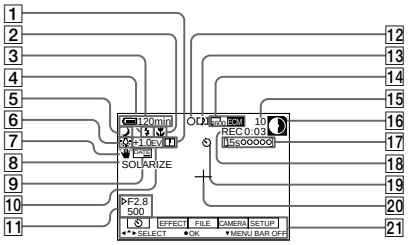
Self-diagnosis display
- C: □□: □□
  You can repair the camera yourself.
- E: □□: □□
  Contact your Sony dealer or local authorized Sony service facility.

Code	Cause and/or Corrective Action
C:32:□□	• There is trouble with the disk drive. →Turn the power off and on again.
C:13:□□	• An unformatted floppy disk or "Memory Stick" is inserted. →Format the floppy disk or "Memory Stick." (page 72) • A floppy disk or "Memory Stick" not compatible with this camera is inserted. →Change the floppy disk or "Memory Stick." (pages 16, 17)
E:61:□□ E:91:□□	• A camera malfunction that you cannot repair has occurred. →Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit indication. (example: E:61:10)

If you are unable to rectify the problem even if you try corrective actions a few times when C:□□:□□ is indicated, contact your Sony dealer or local authorized Sony service facility.

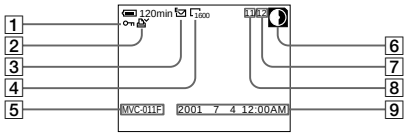
LCD screen/finder indicators

The indicators during recording



1. **Sharpness indicator**
2. **Focus mode indicator/Macro indicator**
3. **Battery remaining indicator**
4. **Flash level indicator/Flash mode indicator**
5. **PROGRAM AE indicator/Zoom indicator**
6. **White balance indicator**
7. **SteadyShot indicator**
8. **Picture effect indicator**
9. **DATE indicator**
10. **EV level indicator**
11. **Iris/Shutter speed indicator**
12. **AE lock indicator/Focus lock indicator**
13. **Recording mode/Clip Motion indicator**
14. **Image size indicator**
15. **Number of recorded images**
16. **Remaining disk capacity/ Remaining memory capacity indicator**
    : Floppy disk
    : "Memory Stick"
17. **Recording time indicator**
18. **Self-diagnosis function indicator/Recording time indicator**
19. **Self-timer indicator**
20. **Spot light-metering indicator**
21. **Menu bar and guide menu**
    They appear by pressing ▲ on the control button and disappear by pressing ▼.

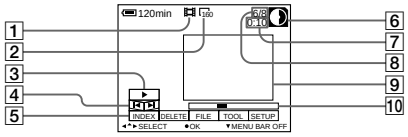
The indicators during still image playback



1. **Protect indicator/Zoom scaling indicator**
2. **Print mark indicator**
3. **Recording mode/Clip Motion indicator**
4. **Image size indicator**
5. **File name***
6. **Remaining disk capacity/Remaining memory capacity indicator**
   : Floppy disk
   : "Memory Stick"
7. **Number of stored images on a floppy disk or "Memory Stick"**
8. **Image number**
9. **Recording date of the playback image***

* When the menu bar is displayed, this indicator disappears from the screen.

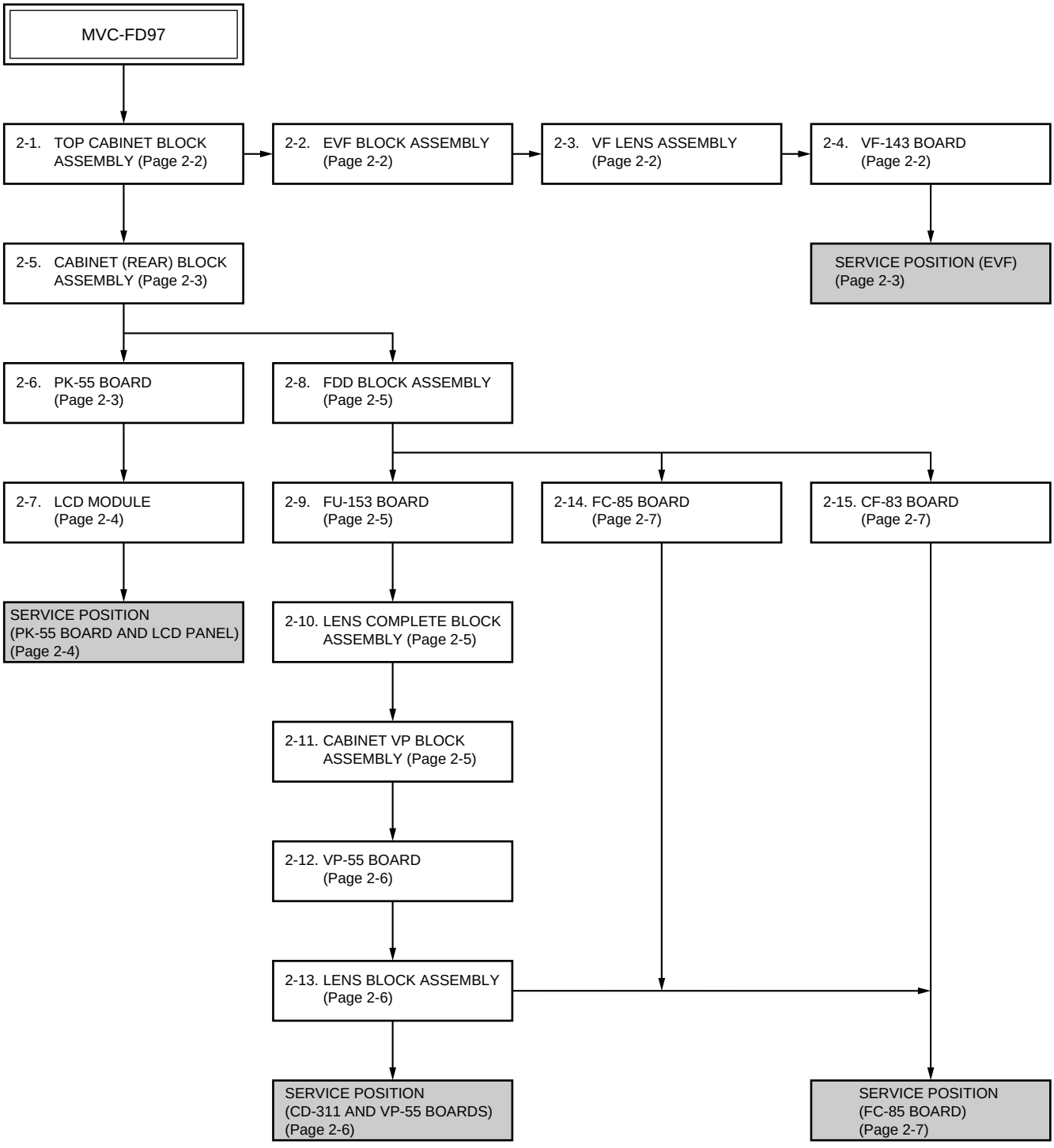
The indicators during moving image playback



1. **Moving image file indicator**
2. **Image size indicator**
3. **Playback button/pause button**
   ► is displayed during stop, and ❚❚ during playback.
4. **Image searching buttons**
5. **Menu bar and guide menu**
6. **Remaining disk capacity/Remaining memory capacity indicator**
   : Floppy disk
   : "Memory Stick"
7. **Counter**
8. **Image number/number of stored images on a floppy disk or "Memory Stick"**
9. **Playback image**
10. **Playback bar**

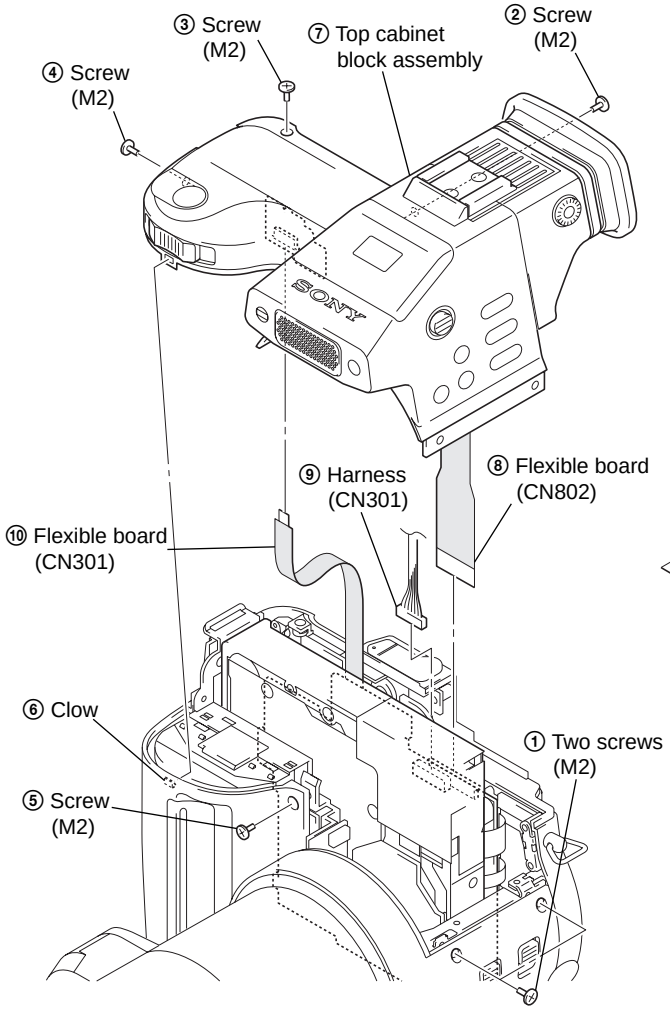
SECTION 2
DISASSEMBLY

• This set can be disassembled in the order shown below.

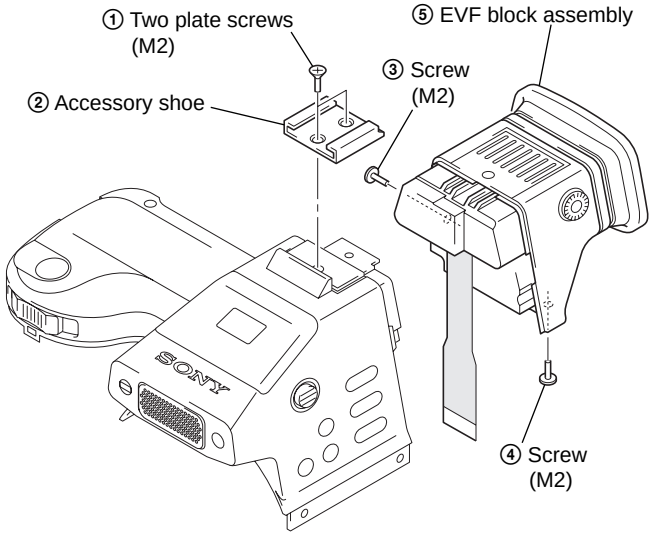

MVC-FD97
2-1. TOP CABINET BLOCK ASSEMBLY (Page 2-2)
2-2. EVF BLOCK ASSEMBLY (Page 2-2)
2-3. VF LENS ASSEMBLY (Page 2-2)
2-4. VF-143 BOARD (Page 2-2)
2-5. CABINET (REAR) BLOCK ASSEMBLY (Page 2-3)
SERVICE POSITION (EVF) (Page 2-3)
2-6. PK-55 BOARD (Page 2-3)
2-8. FDD BLOCK ASSEMBLY (Page 2-5)
2-7. LCD MODULE (Page 2-4)
2-9. FU-153 BOARD (Page 2-5)
2-14. FC-85 BOARD (Page 2-7)
2-15. CF-83 BOARD (Page 2-7)
SERVICE POSITION (PK-55 BOARD AND LCD PANEL) (Page 2-4)
2-10. LENS COMPLETE BLOCK ASSEMBLY (Page 2-5)
2-11. CABINET VP BLOCK ASSEMBLY (Page 2-5)
2-12. VP-55 BOARD (Page 2-6)
2-13. LENS BLOCK ASSEMBLY (Page 2-6)
SERVICE POSITION (CD-311 AND VP-55 BOARDS) (Page 2-6)
SERVICE POSITION (FC-85 BOARD) (Page 2-7)

Note: Follow the disassembly procedure in the numerical order given.

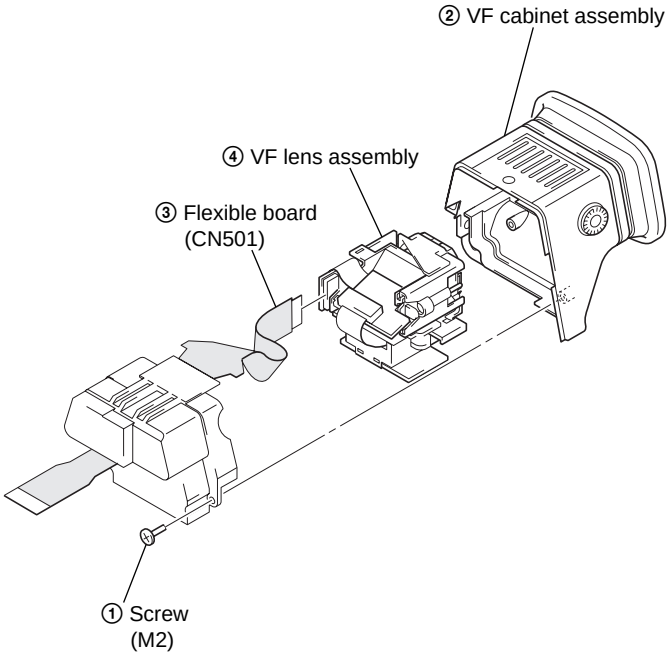
2-1. TOP CABINET BLOCK ASSEMBLY



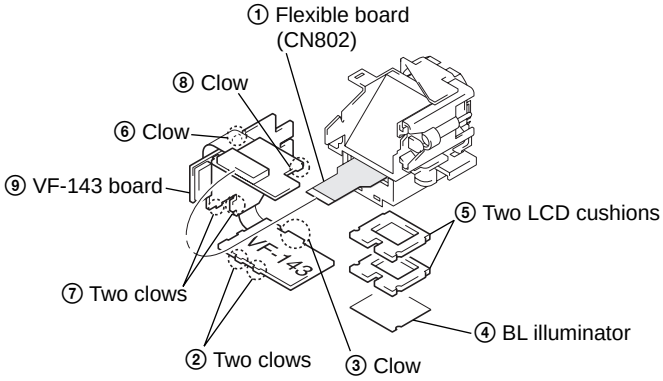
2-2. EVF BLOCK ASSEMBLY



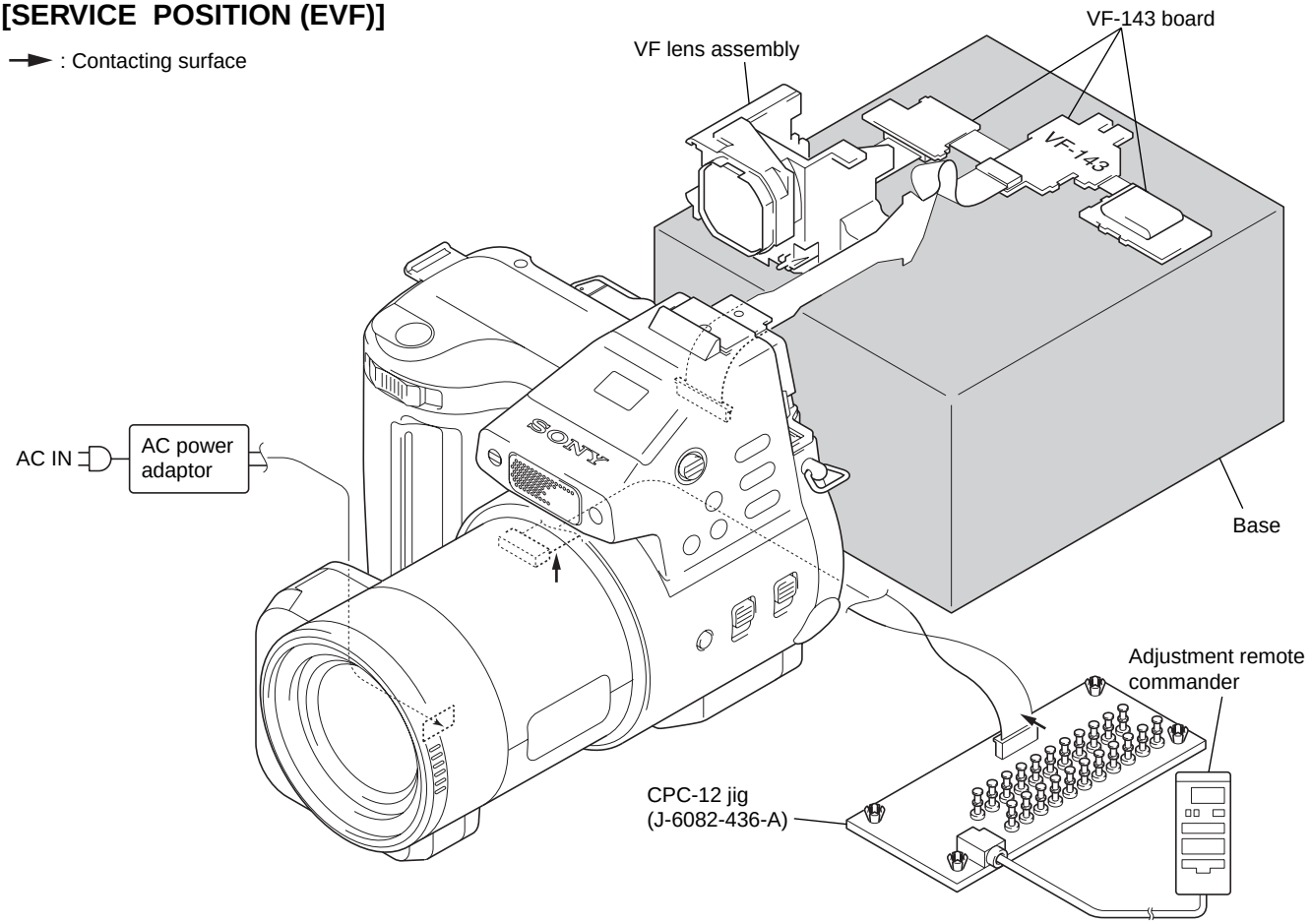
2-3. VF LENS ASSEMBLY



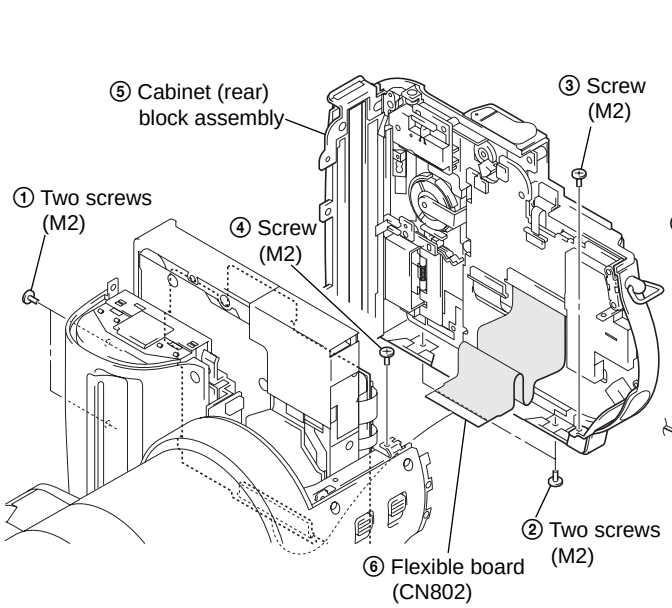
2-4. VF-143 BOARD



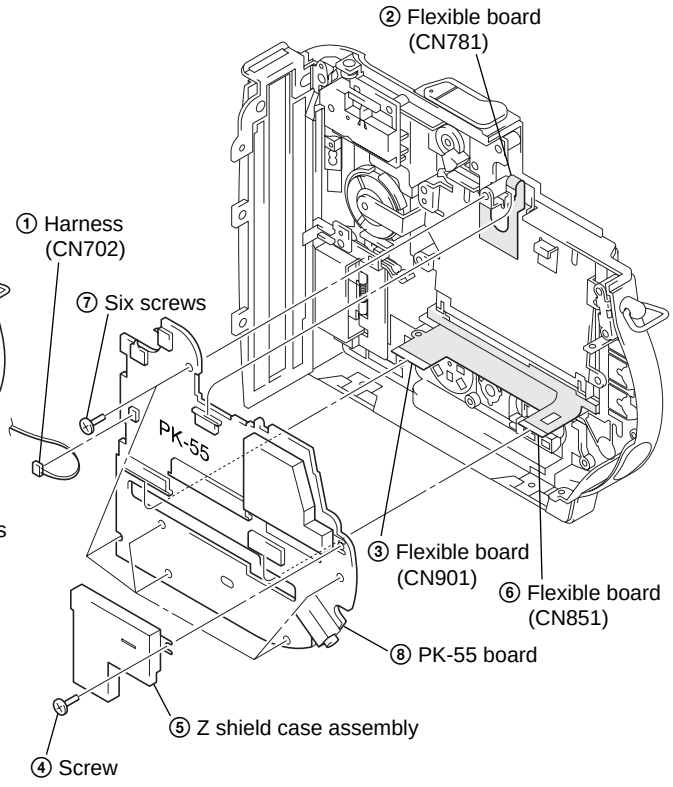
[SERVICE POSITION (EVF)]



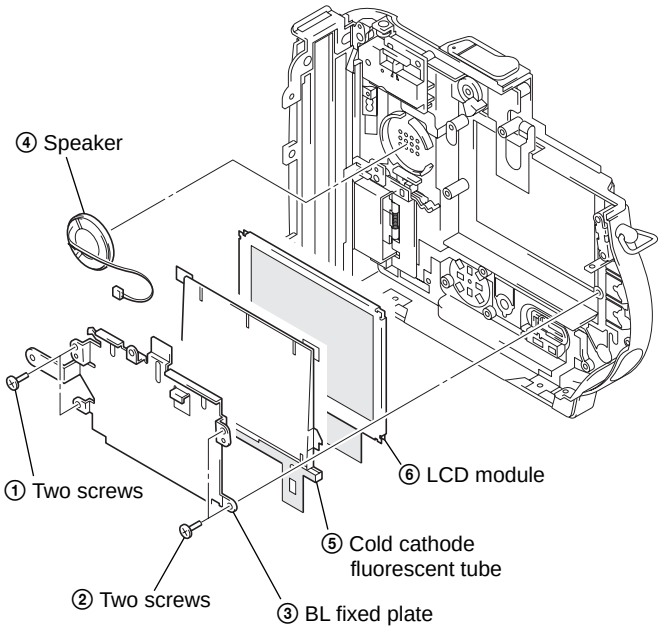
2-5. CABINET (REAR) BLOCK ASSEMBLY



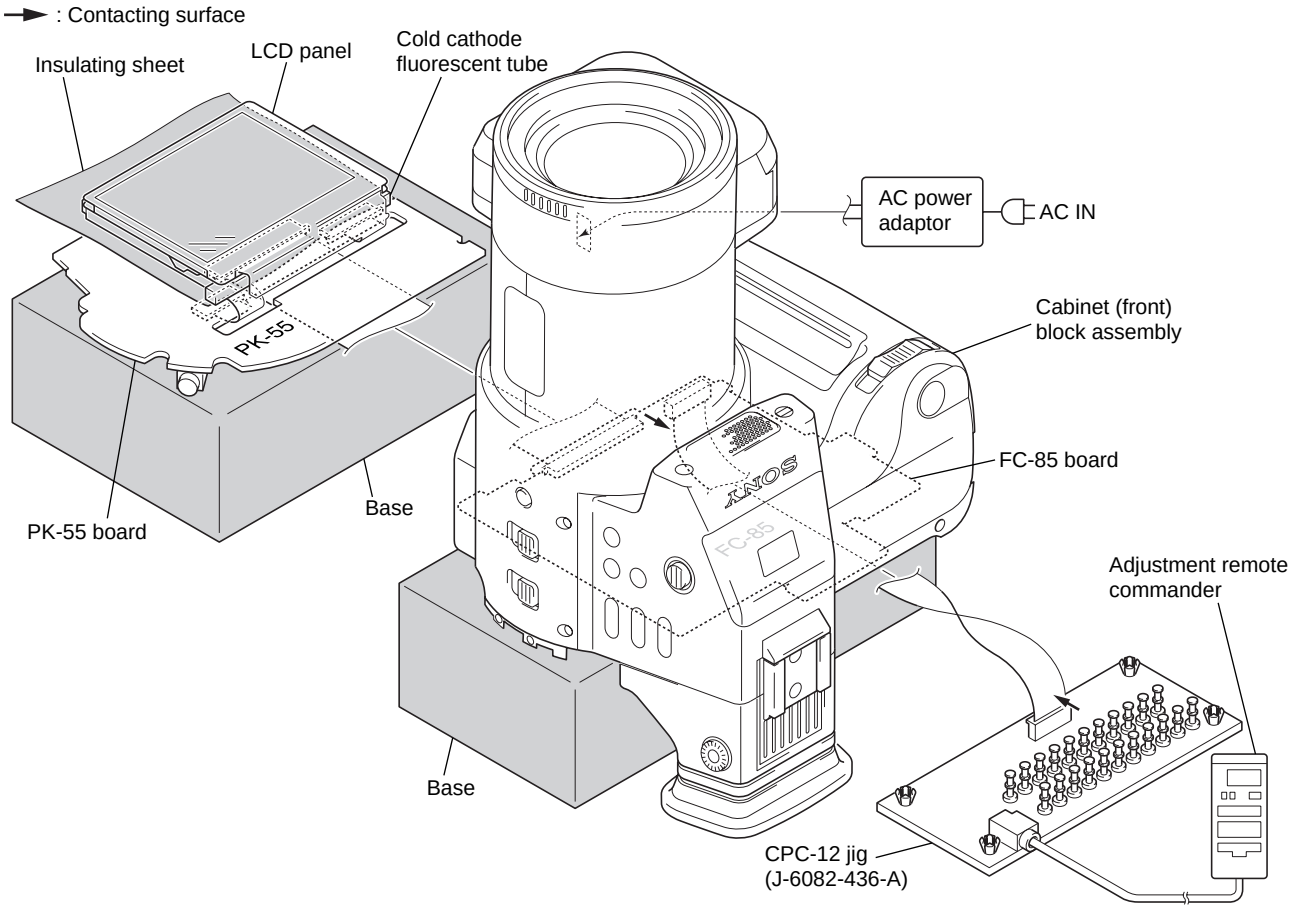
2-6. PK-55 BOARD



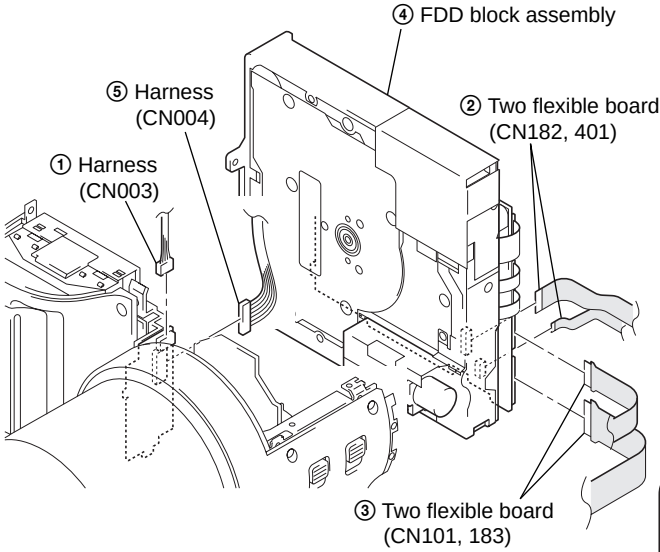
2-7. LCD MODULE



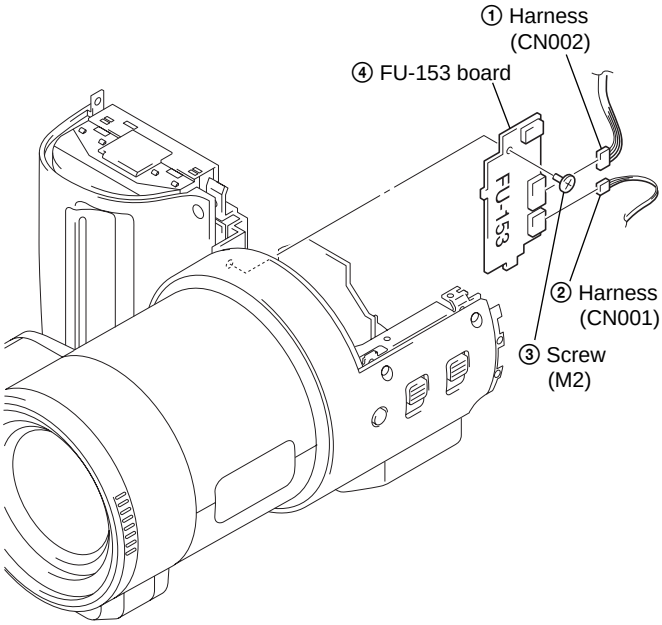
[SERVICE POSITION (PK-55 BOARD AND LCD PANEL)]



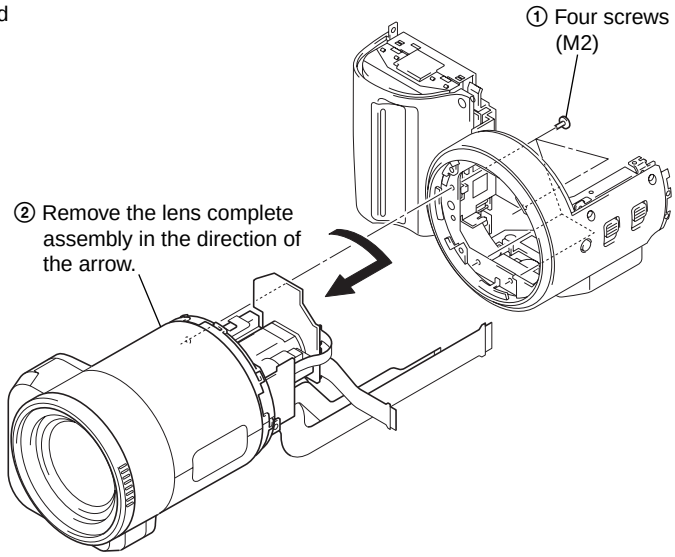
2-8. FDD BLOCK ASSEMBLY



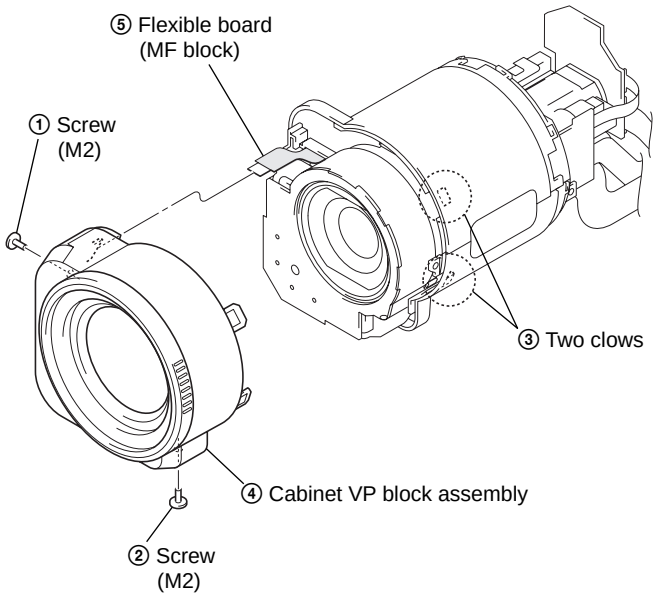
2-9. FU-153 BOARD



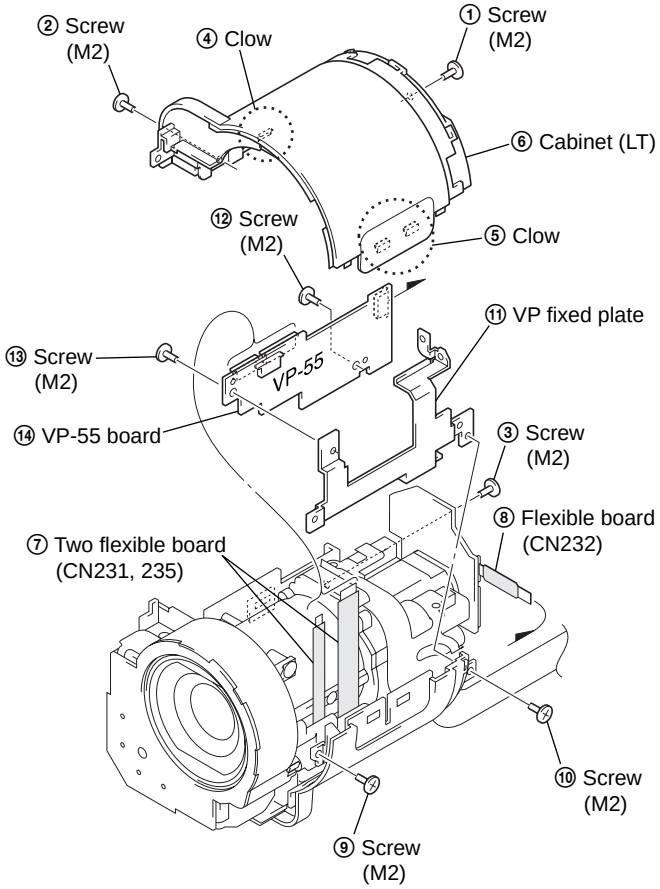
2-10. LENS COMPLETE BLOCK ASSEMBLY



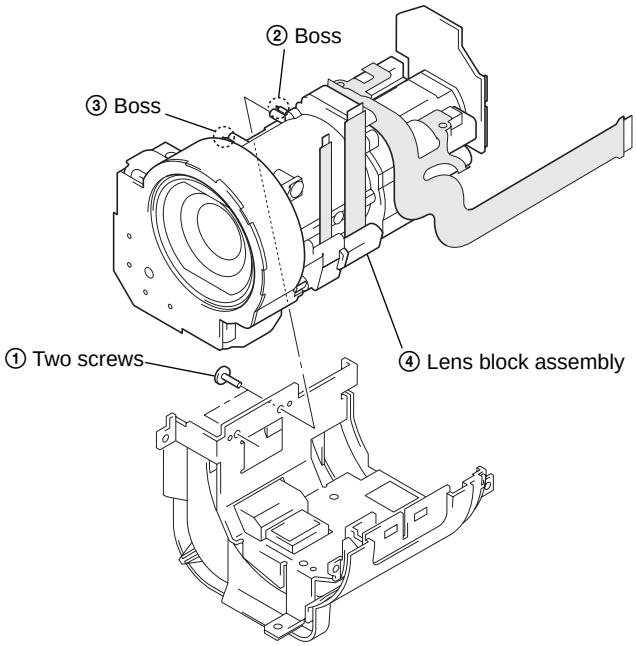
2-11. CABINET VP BLOCK ASSEMBLY



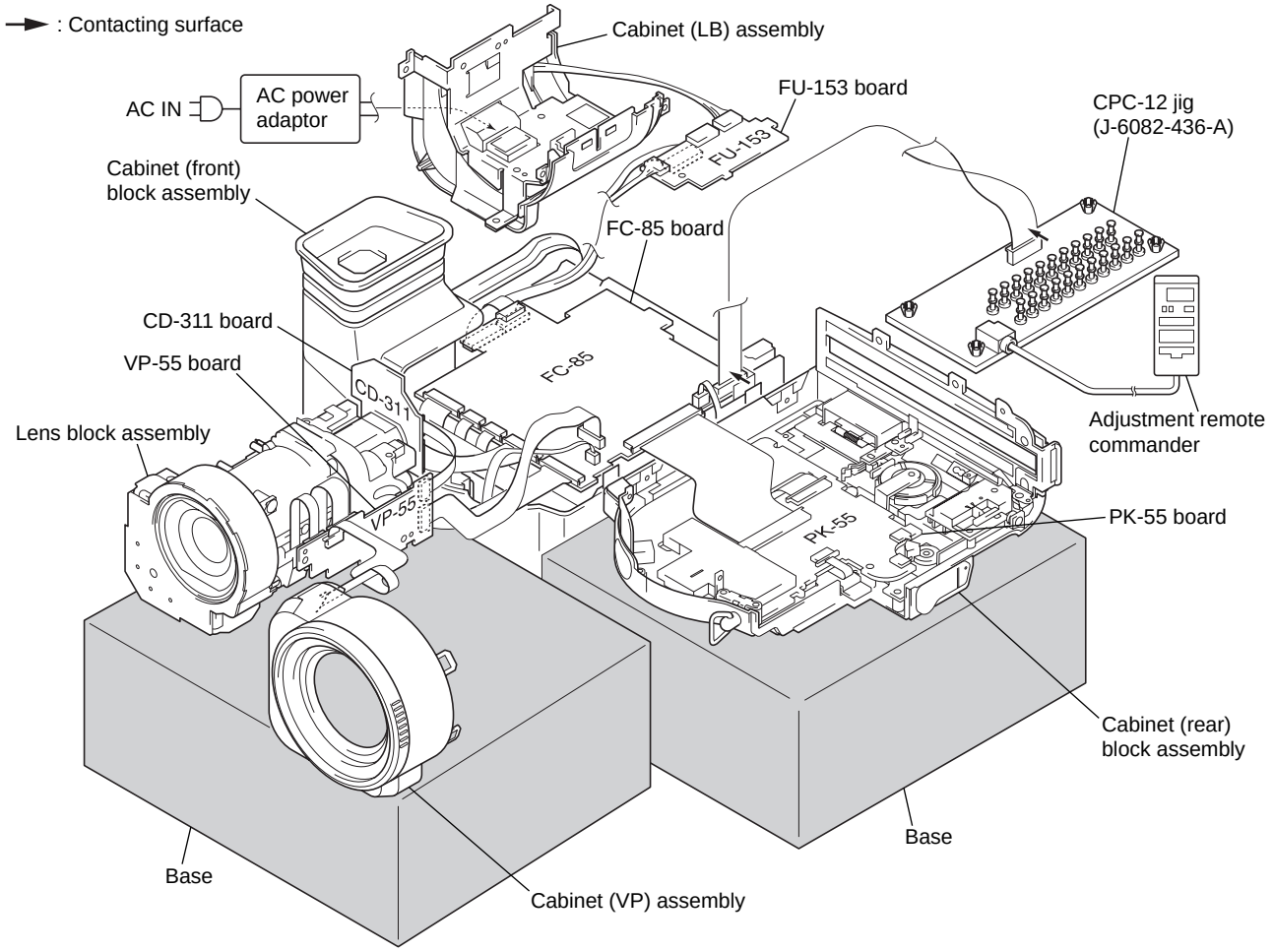
2-12. VP-55 BOARD



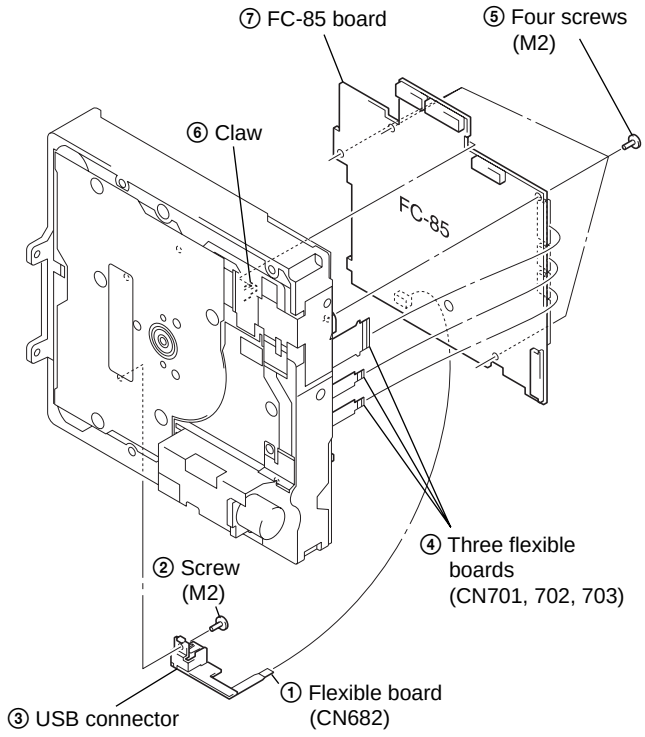
2-13. LENS BLOCK ASSEMBLY



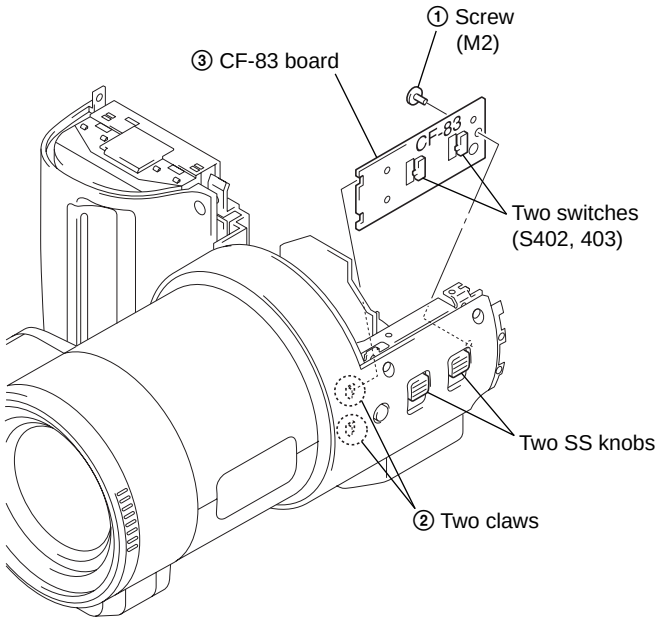
[SERVICE POSITION (CD-311 AND VP-55 BOARDS)]



2-14. FC-85 BOARD

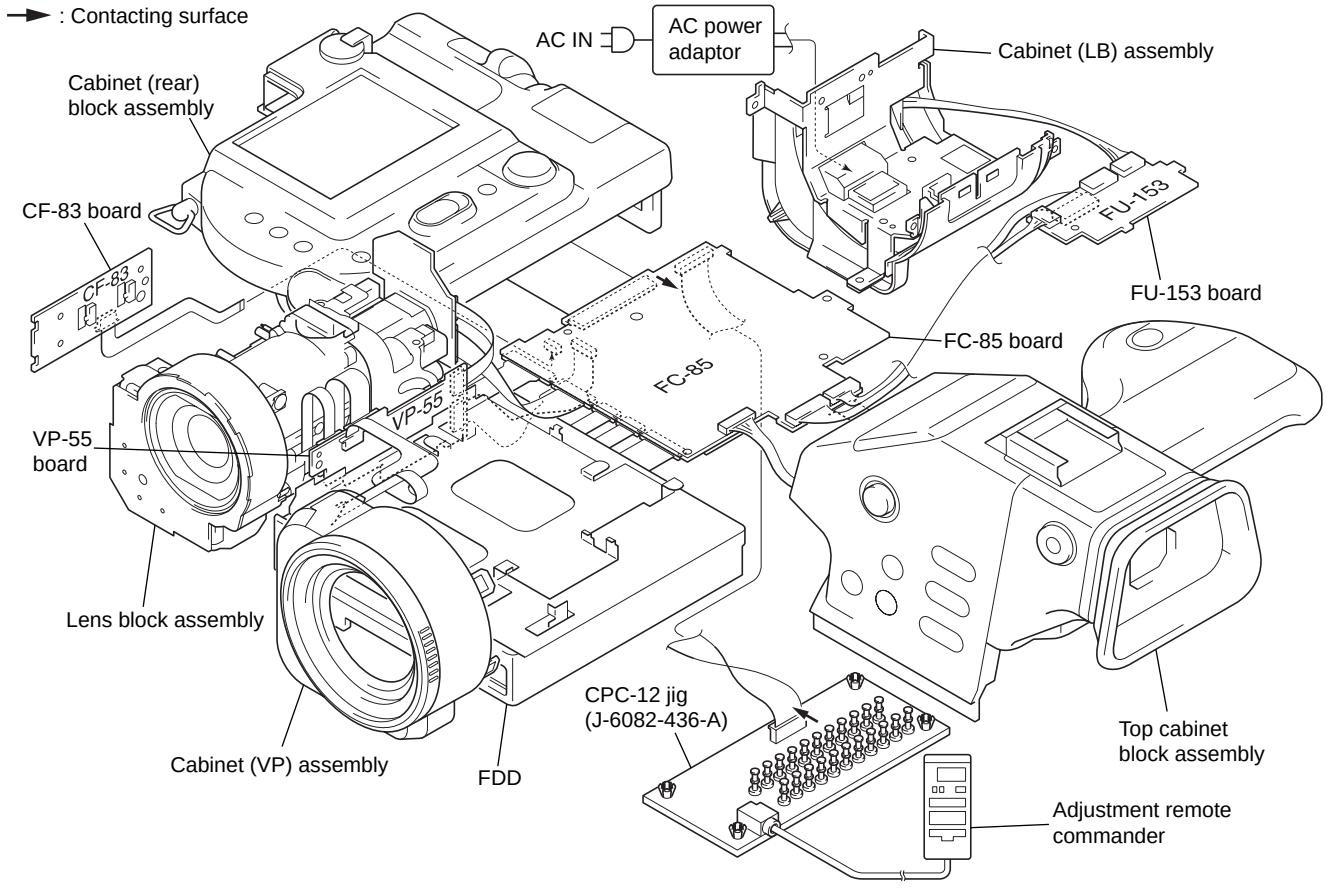


2-15. CF-83 BOARD

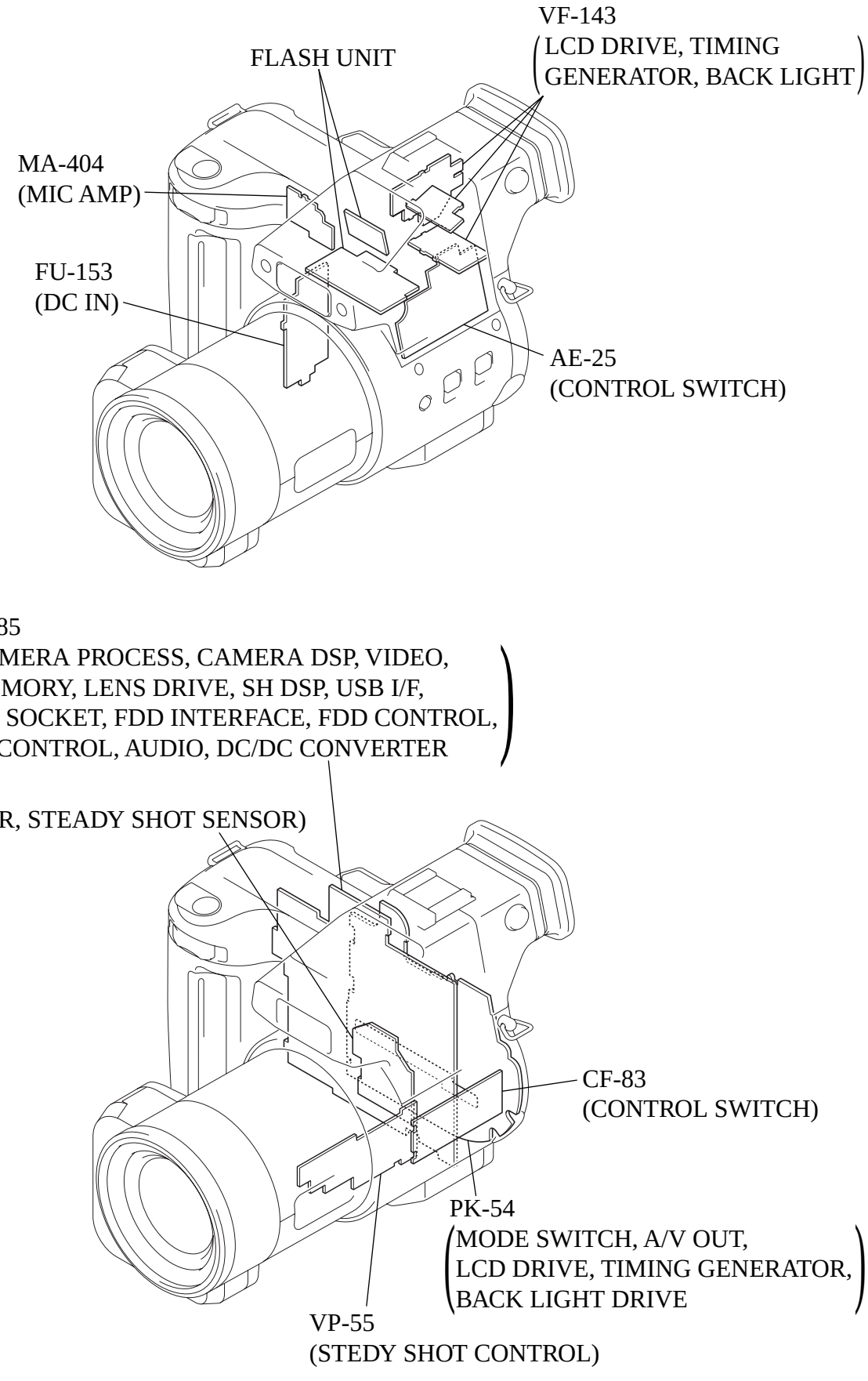


Note: When installing CF-83 board, connect two switches (S402, 403) with two SS knobs.

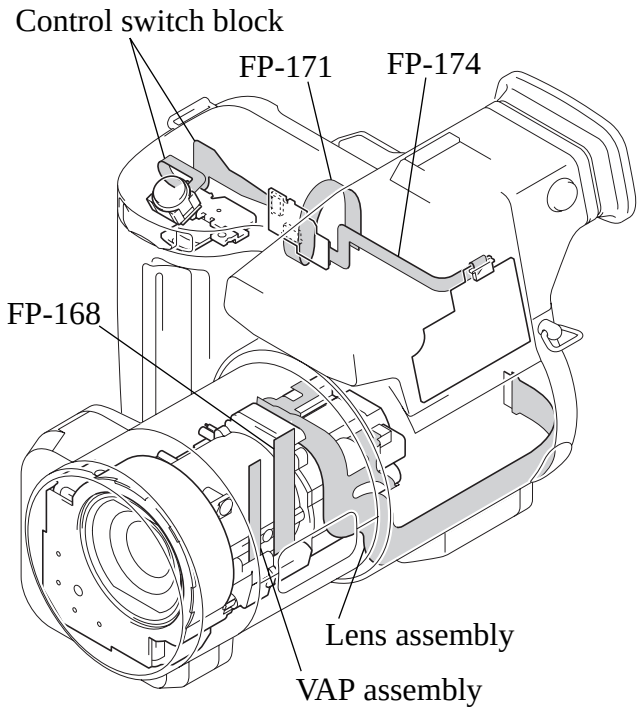
[SERVICE POSITION (FC-85 BOARD)]

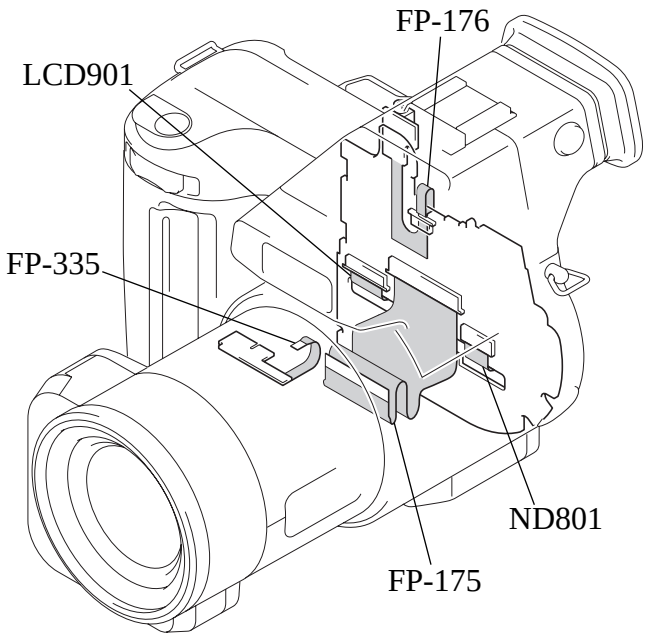


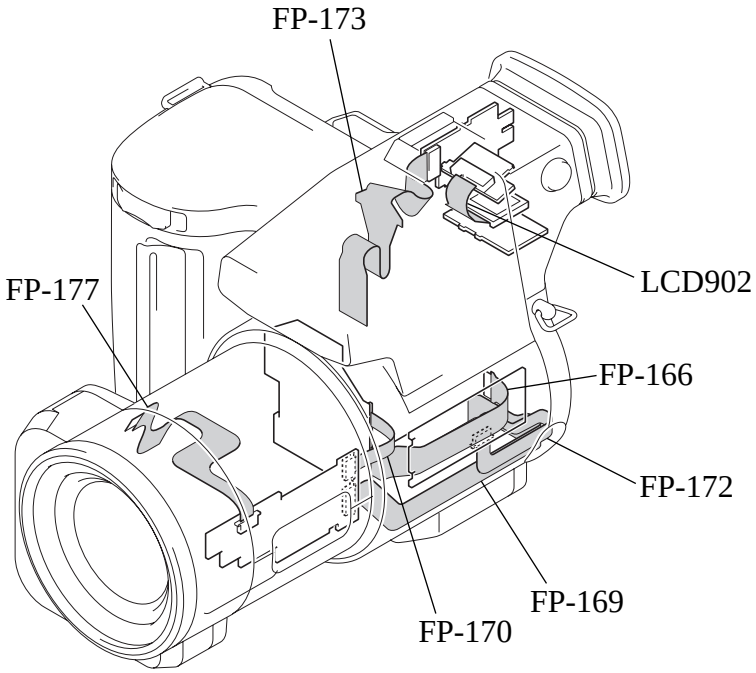
2-16. CIRCUIT BOARDS LOCATION



2-17. FLEXIBLE BOARDS LOCATION

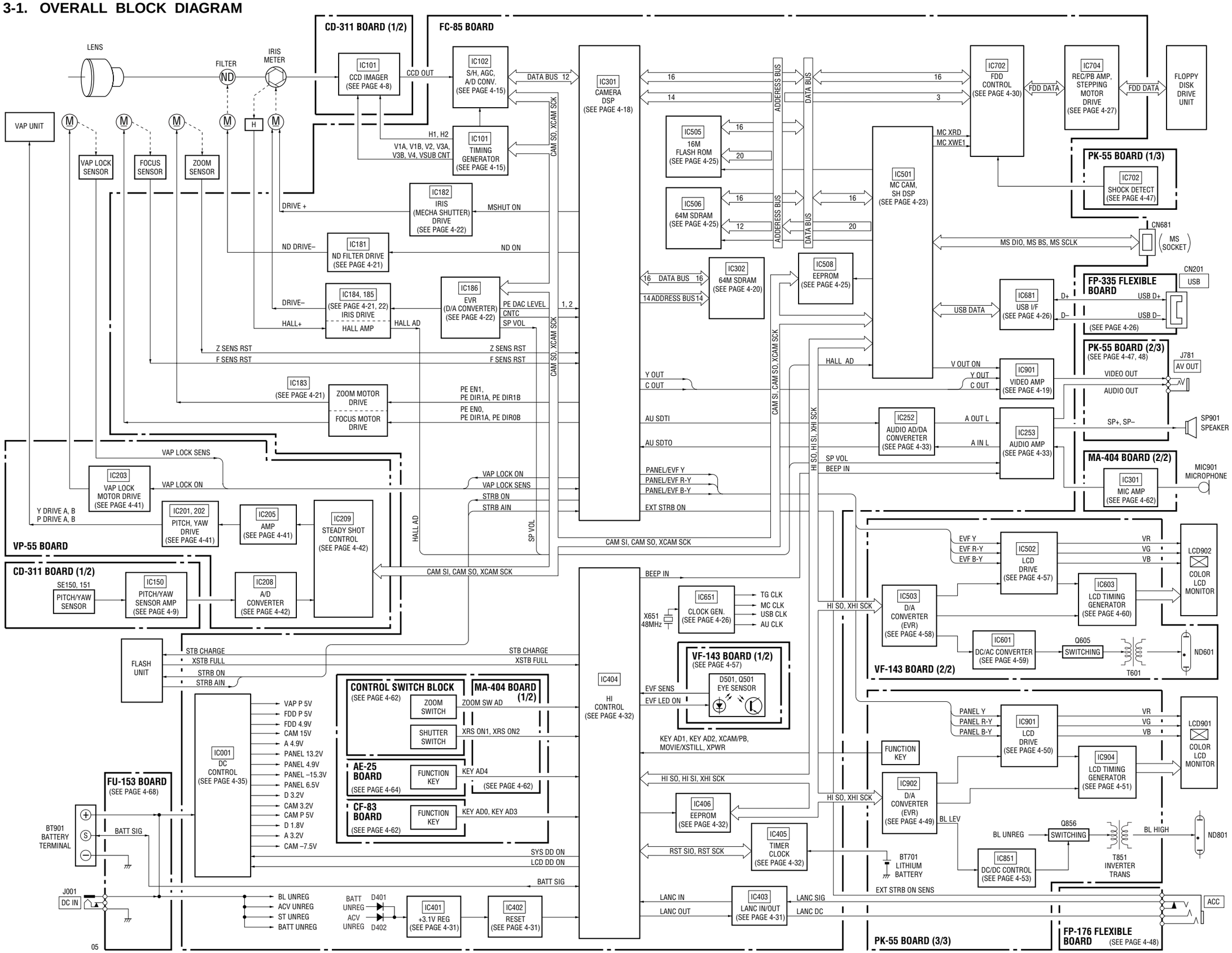




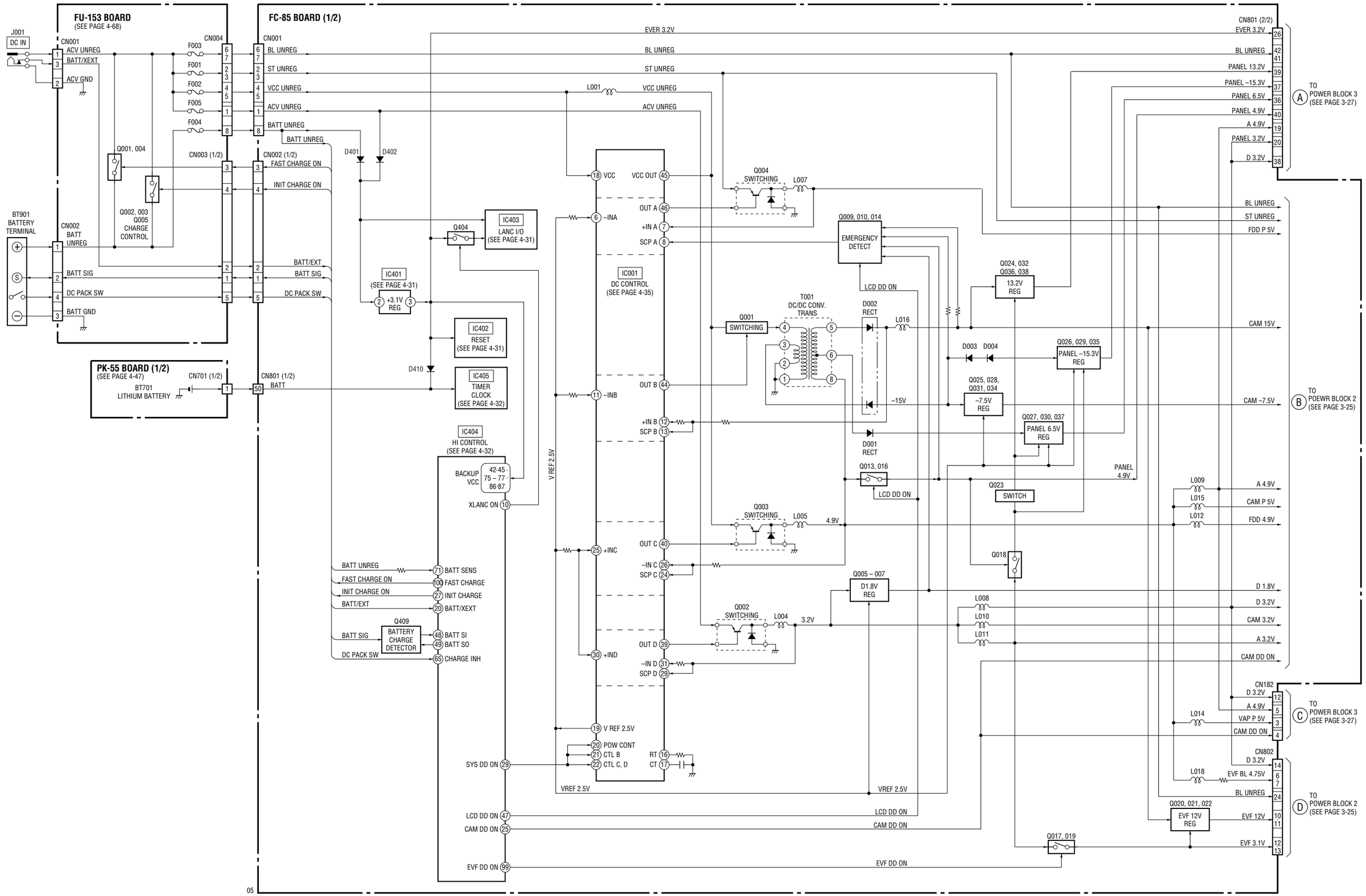


SECTION 3
BLOCK DIAGRAMS

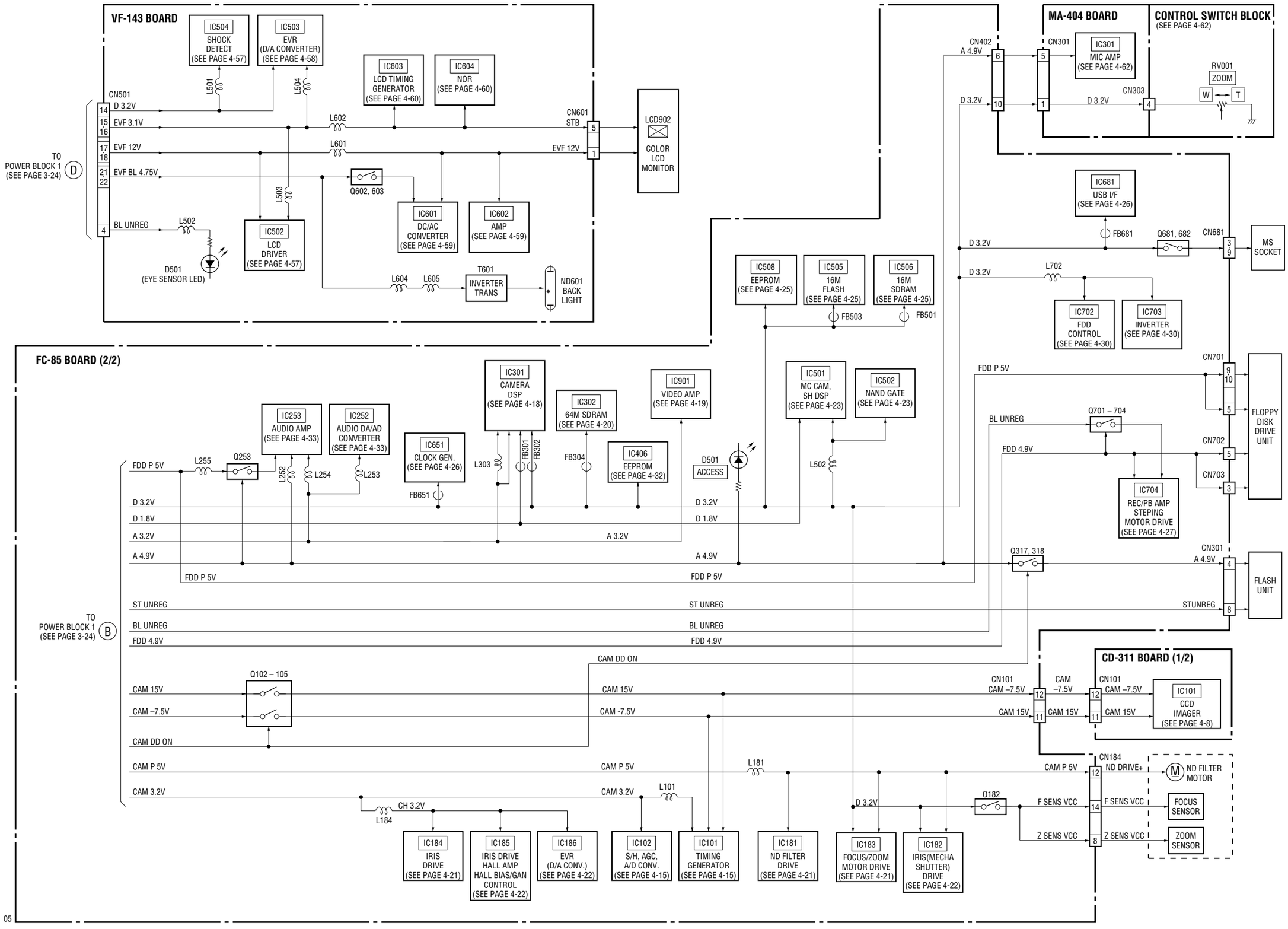
3-1. OVERALL BLOCK DIAGRAM



3-12. POWER BLOCK DIAGRAM 1

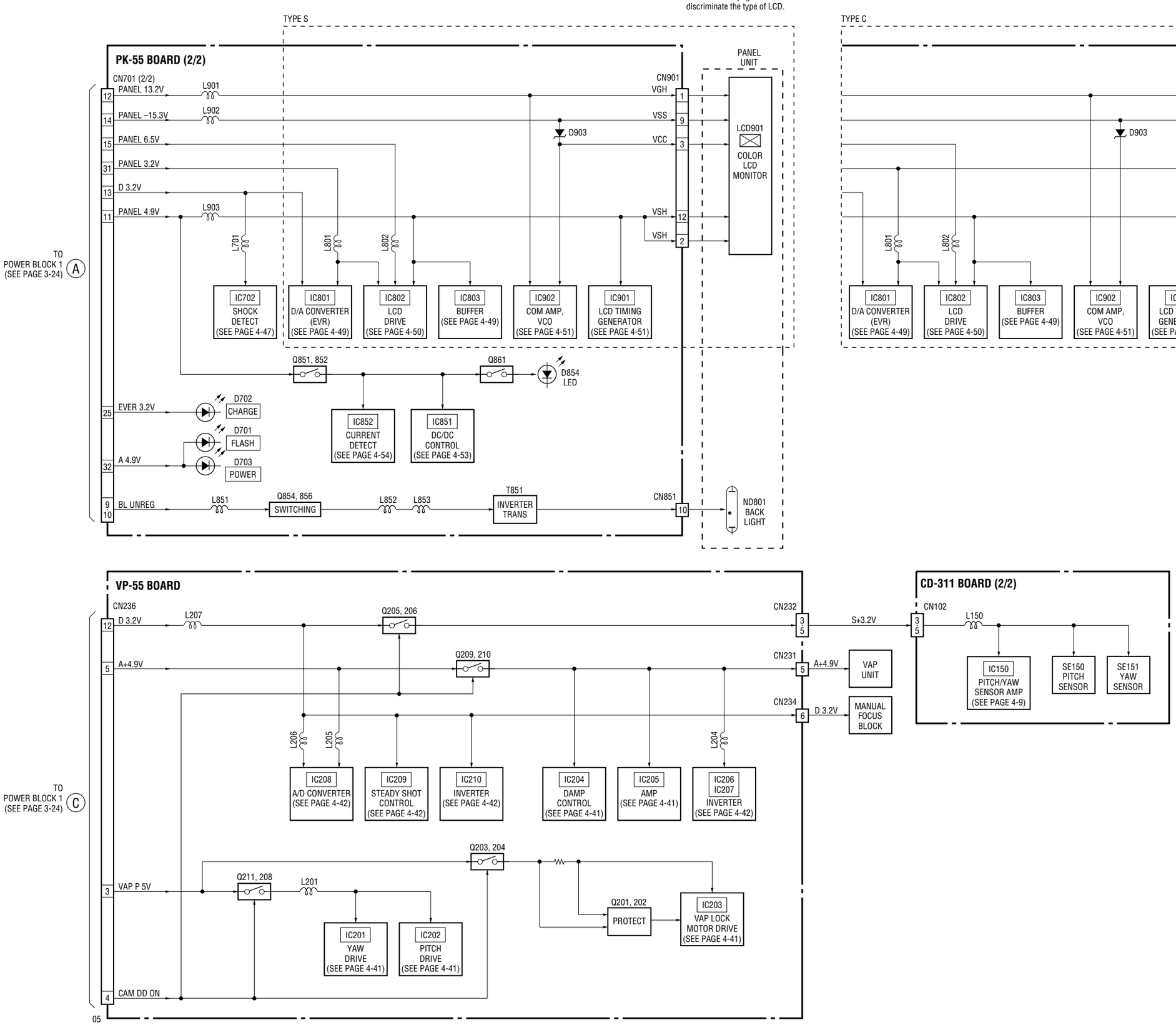


3-13. POWER BLOCK DIAGRAM 2



3-14. POWER BLOCK DIAGRAM 3

TYPE S/C model: Please refer to page 6 to discriminate the type of LCD.

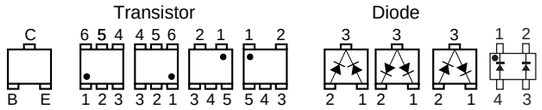


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

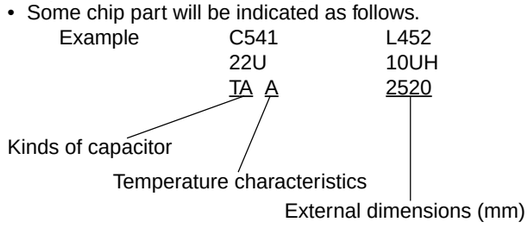
(For printed wiring boards)

- ▒▒▒: Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.



- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line *
- : B– Line *
- : IN/OUT direction of (+,–) B LINE. *
- : adjustment for repair. *
- Circled numbers refer to waveforms. *

* Indicated by the color red.

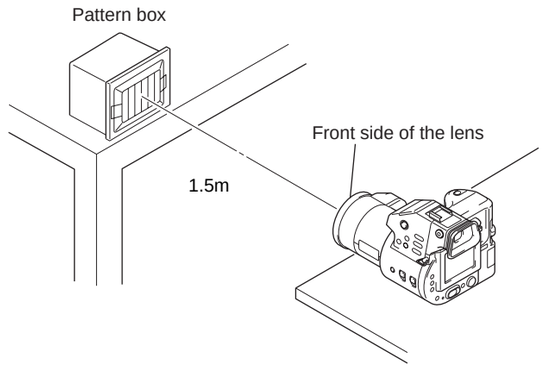
Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Note : Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms. *
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

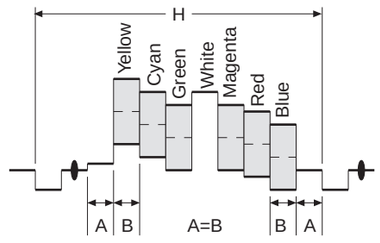


Fig. a (Video output terminal waveform)

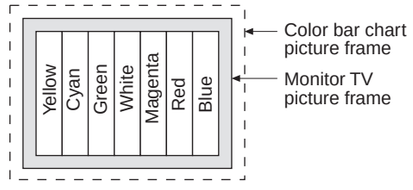
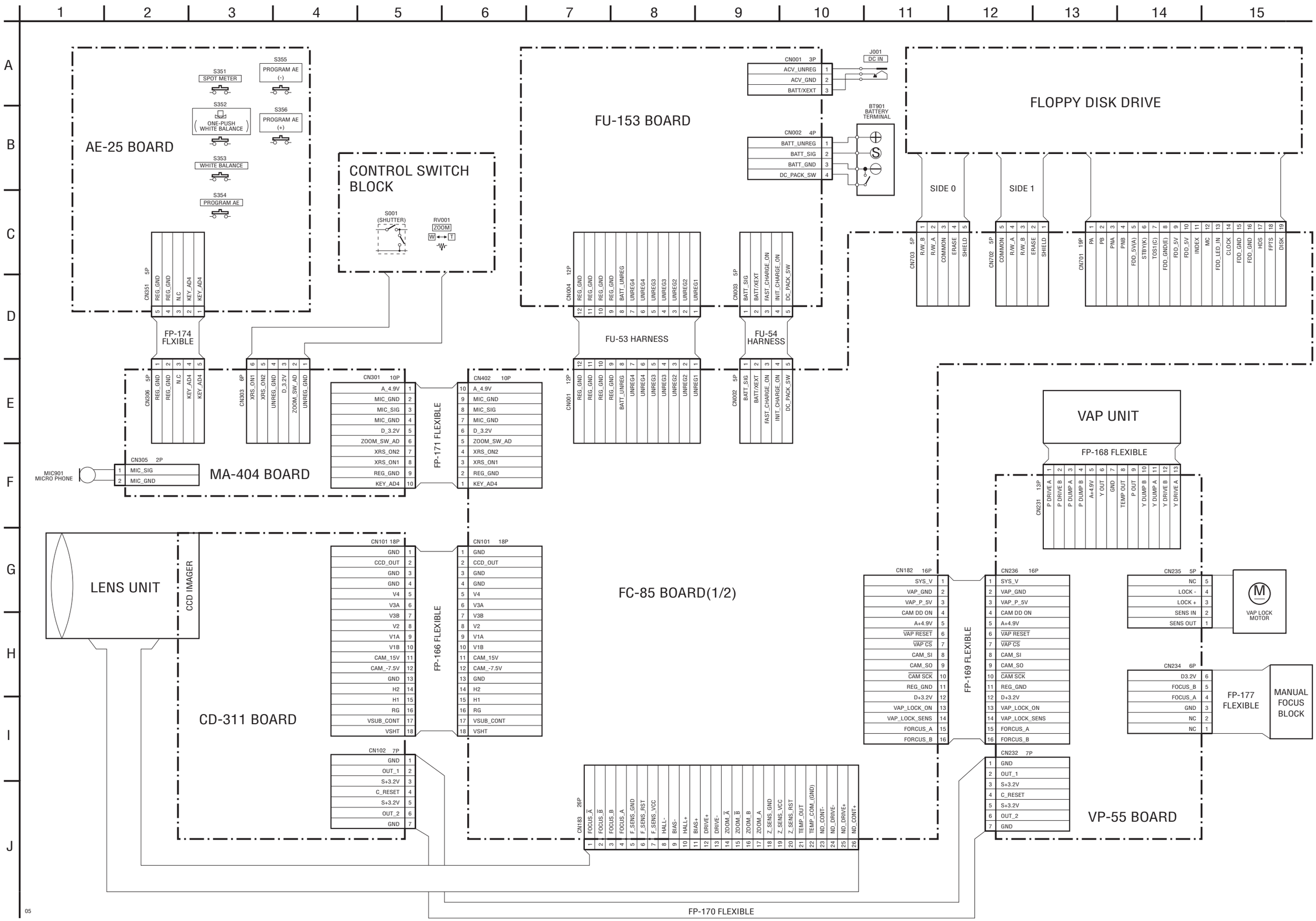


Fig.b (Picture on monitor TV)

When indicating parts by reference number, please include the board name.

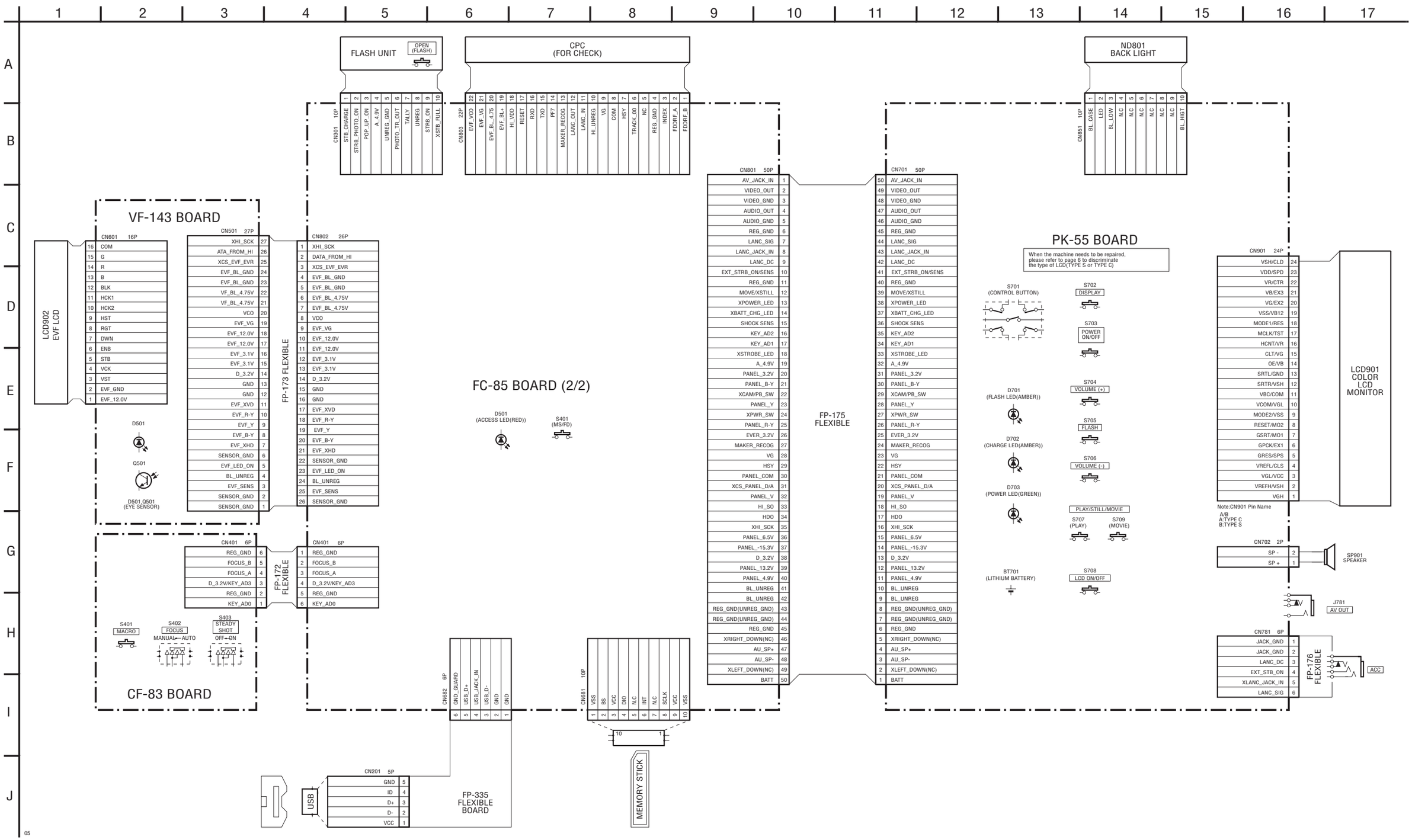
4-1. FRAME SCHEMATIC DIAGRAMS

FRAME SCHEMATIC DIAGRAM (1/2)


AE-25 BOARD
S351 SPOT METER
S352 ONE-PUSH WHITE BALANCE
S353 WHITE BALANCE
S354 PROGRAM AE
S355 PROGRAM AE (-)
S356 PROGRAM AE (+)
CONTROL SWITCH BLOCK
S001 (SHUTTER)
RV001 ZOOM W T
FU-153 BOARD
CN001 3P ACV_UNREG ACV_GND BATT/XEXT
J001 DC IN
BT901 BATTERY TERMINAL
CN002 4P BATT_UNREG BATT_SIG BATT_GND DC_PACK_SW
FLOPPY DISK DRIVE
SIDE 0
SIDE 1
CN703 5P R/W_B R/W_A COMMON ERASE SHIELD
CN702 5P COMMON R/W_A R/W_B ERASE SHIELD
CN701 19P PA PB PNA PNB FDD_5V(A) STBY(K) TOS1(C) FDD_GND(E) FDD_5V FDD_5V INDEX MC FDD_LED_IN CLOCK FDD_GND FDD_GND HDS FPTS DISK
CN351 5P REG_GND REG_GND N.C KEY_AD4 KEY_AD4
FP-174 FLXIBLE
CN306 5P REG_GND REG_GND N.C KEY_AD4 KEY_AD4
CN303 6P XRS_ON1 XRS_ON2 UNREG_GND D_3.2V ZOOM_SW_AD UNREG_GND
CN004 12P REG_GND REG_GND REG_GND REG_GND BATT_UNREG UNREG4 UNREG4 UNREG3 UNREG3 UNREG2 UNREG2 UNREG1
FU-53 HARNESS
CN003 5P BATT_SIG BATT/XEXT FAST_CHARGE_ON INIT_CHARGE_ON DC_PACK_SW
FU-54 HARNESS
CN001 12P REG_GND REG_GND REG_GND REG_GND BATT_UNREG UNREG4 UNREG4 UNREG3 UNREG3 UNREG2 UNREG2 UNREG1
CN002 5P BATT_SIG BATT/XEXT FAST_CHARGE_ON INIT_CHARGE_ON DC_PACK_SW
CN301 10P A_4.9V MIC_GND MIC_SIG MIC_GND D_3.2V ZOOM_SW_AD XRS_ON2 XRS_ON1 REG_GND KEY_AD4
FP-171 FLEXIBLE
CN402 10P A_4.9V MIC_GND MIC_SIG MIC_GND D_3.2V ZOOM_SW_AD XRS_ON2 XRS_ON1 REG_GND KEY_AD4
VAP UNIT
FP-168 FLEXIBLE
CN231 13P P DRIVE A P DRIVE B P DUMP A P DUMP B A+4.9V Y OUT GND TEMP OUT P OUT Y DUMP B Y DUMP A Y DRIVE B Y DRIVE A
CN305 2P MIC_SIG MIC_GND
MIC901 MICRO PHONE
MA-404 BOARD
LENS UNIT
CCD IMAGER
CD-311 BOARD
CN101 18P GND CCD_OUT GND GND V4 V3A V3B V2 V1A V1B CAM_15V CAM_-7.5V GND H2 H1 RG VSUB_CONT VSHT
FP-166 FLEXIBLE
CN101 18P GND CCD_OUT GND GND V4 V3A V3B V2 V1A V1B CAM_15V CAM_-7.5V GND H2 H1 RG VSUB_CONT VSHT
FC-85 BOARD(1/2)
CN102 7P GND OUT_1 S+3.2V C_RESET S+3.2V OUT_2 GND
CN183 26P FOCUS_A FOCUS_B FOCUS_B FOCUS_A F_SENS_GND F_SENS_RST F_SENS_VCC HALL- BIAS- HALL+ BIAS+ DRIVE+ DRIVE- ZOOM_A ZOOM_B ZOOM_B ZOOM_A Z_SENS_GND Z_SENS_VCC Z_SENS_RST TEMP_OUT TEMP_COM_(GND) ND_CONT- ND_DRIVE- ND_DRIVE+ ND_CONT+
CN182 16P SYS_V VAP_GND VAP_P_5V CAM DD ON A+4.9V VAP RESET VAP CS CAM_SI CAM_SO CAM SCK REG_GND D+3.2V VAP_LOCK_ON VAP_LOCK_SENS FORCUS_A FORCUS_B
FP-169 FLEXIBLE
CN236 16P SYS_V VAP_GND VAP_P_5V CAM DD ON A+4.9V VAP RESET VAP CS CAM_SI CAM_SO CAM SCK REG_GND D+3.2V VAP_LOCK_ON VAP_LOCK_SENS FORCUS_A FORCUS_B
CN235 5P NC LOCK - LOCK + SENS IN SENS OUT
VAP LOCK MOTOR
CN234 6P D3.2V FOCUS_B FOCUS_A GND NC NC
FP-177 FLEXIBLE
MANUAL FOCUS BLOCK
CN232 7P GND OUT_1 S+3.2V C_RESET S+3.2V OUT_2 GND
VP-55 BOARD
FP-170 FLEXIBLE

FRAME (1/2)

FRAME SCHEMATIC DIAGRAM (2/2)

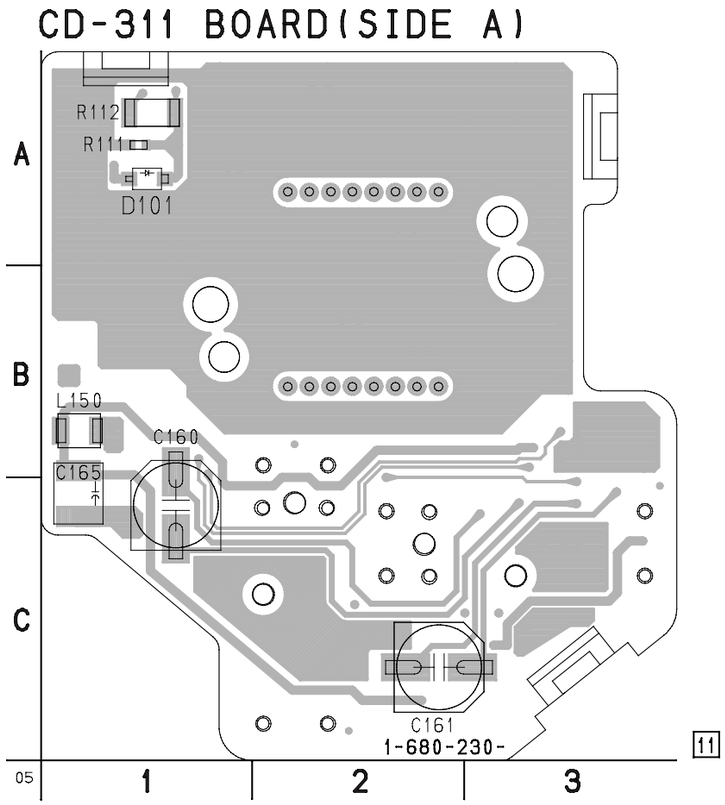


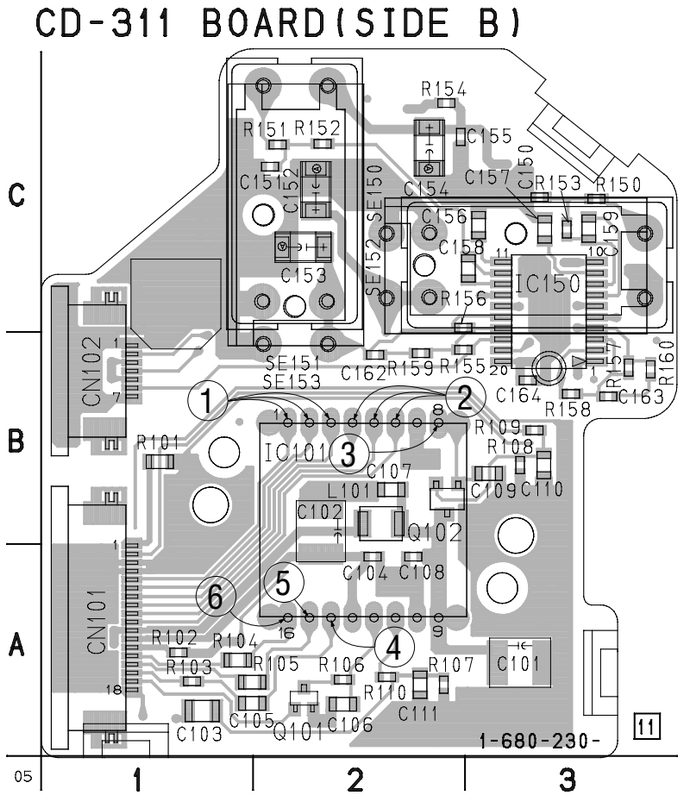
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

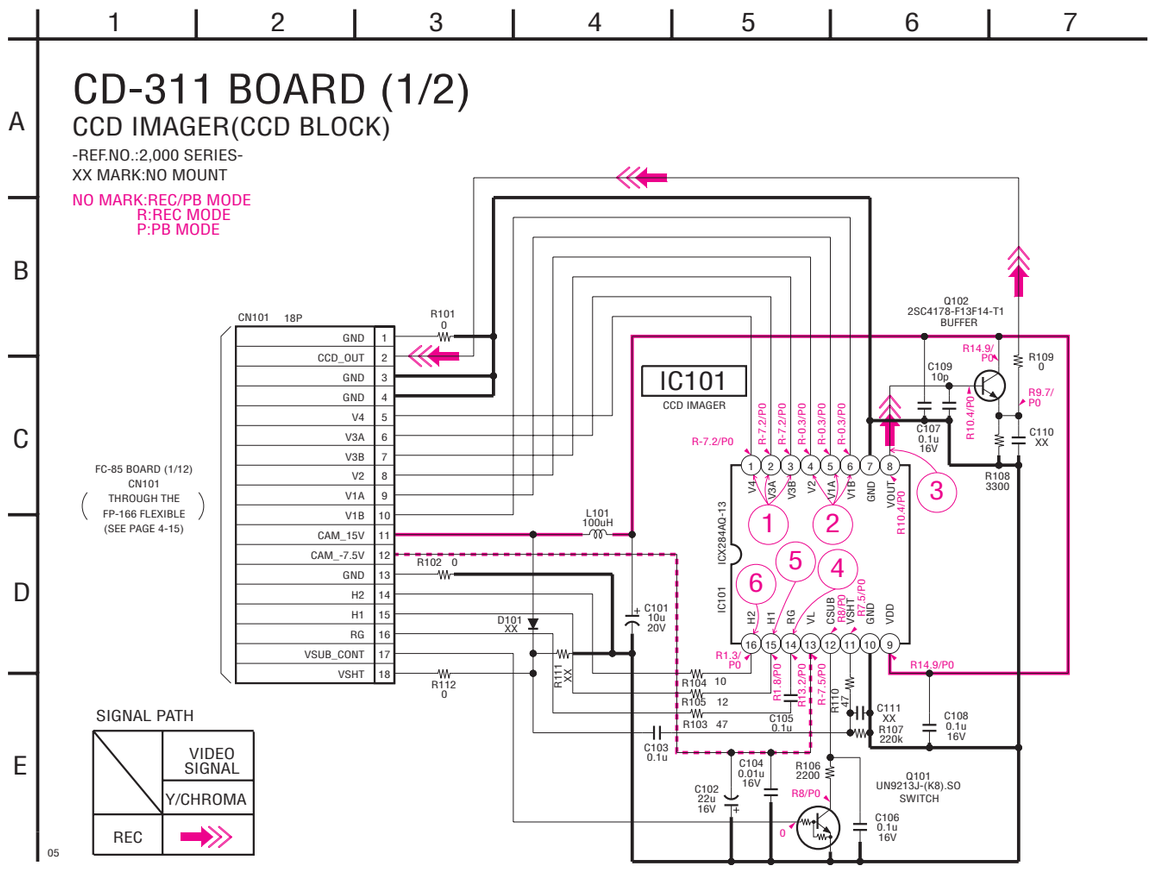
CD-311 (CCD IMAGER, STEADY SHOT SENSOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM • See page 4-69 for waveforms.

– Ref. No.: CD-311 board; 2,000 series –

- **For Printed Wiring Board.**
- CD-311 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-73 for printed parts location.
- Chip transistor







Precautions for Replacement of CCD Imager

- The CD-311 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

CCD IMAGER, STEADY SHOT SENSOR
CD-311 (1/2)

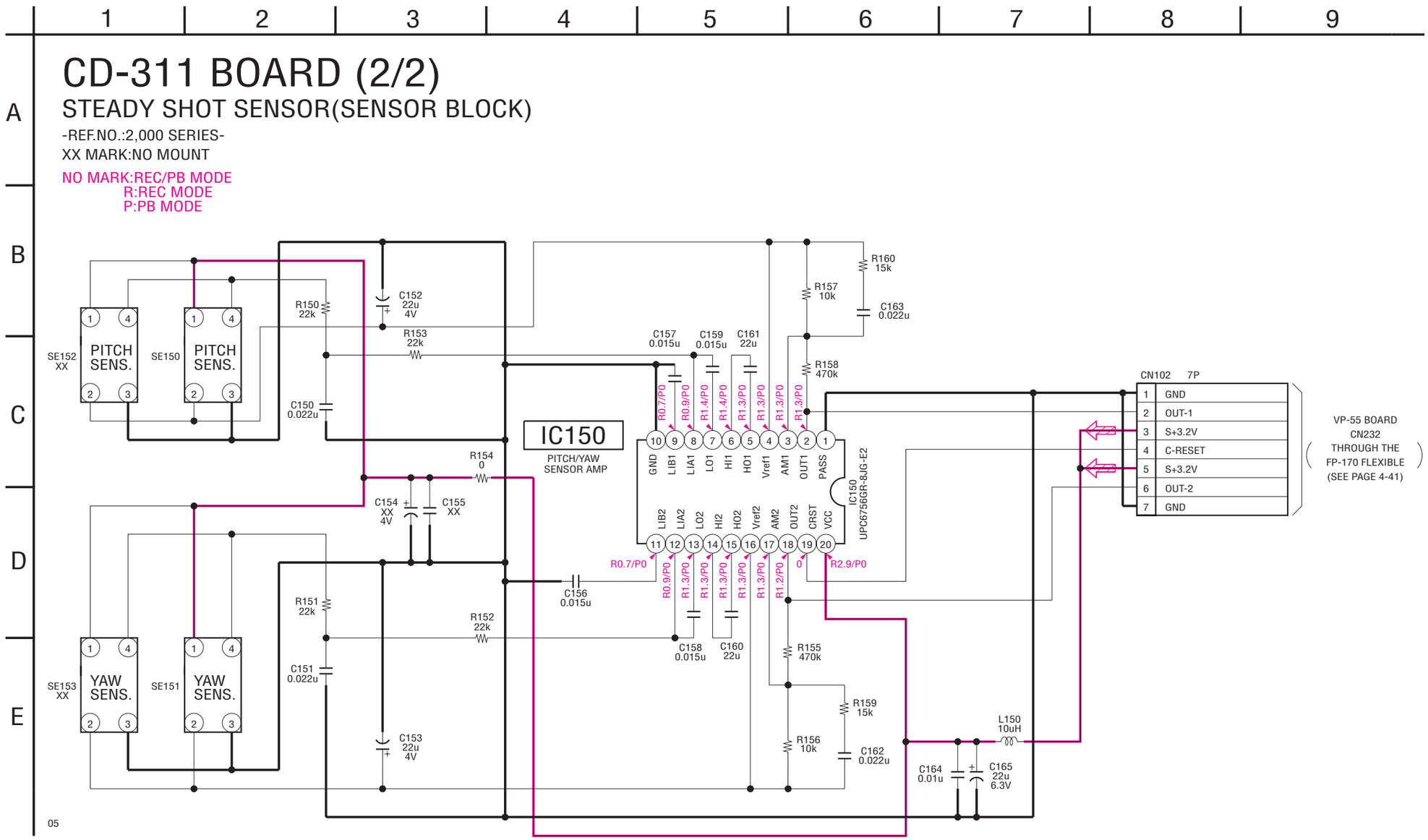
CD-311 (STEADY SHOT SENSOR) SCHEMATIC DIAGRAM • See page 4-7 for CD-311 printed wiring board.

CD-311 BOARD (2/2)

STEADY SHOT SENSOR(SENSOR BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE



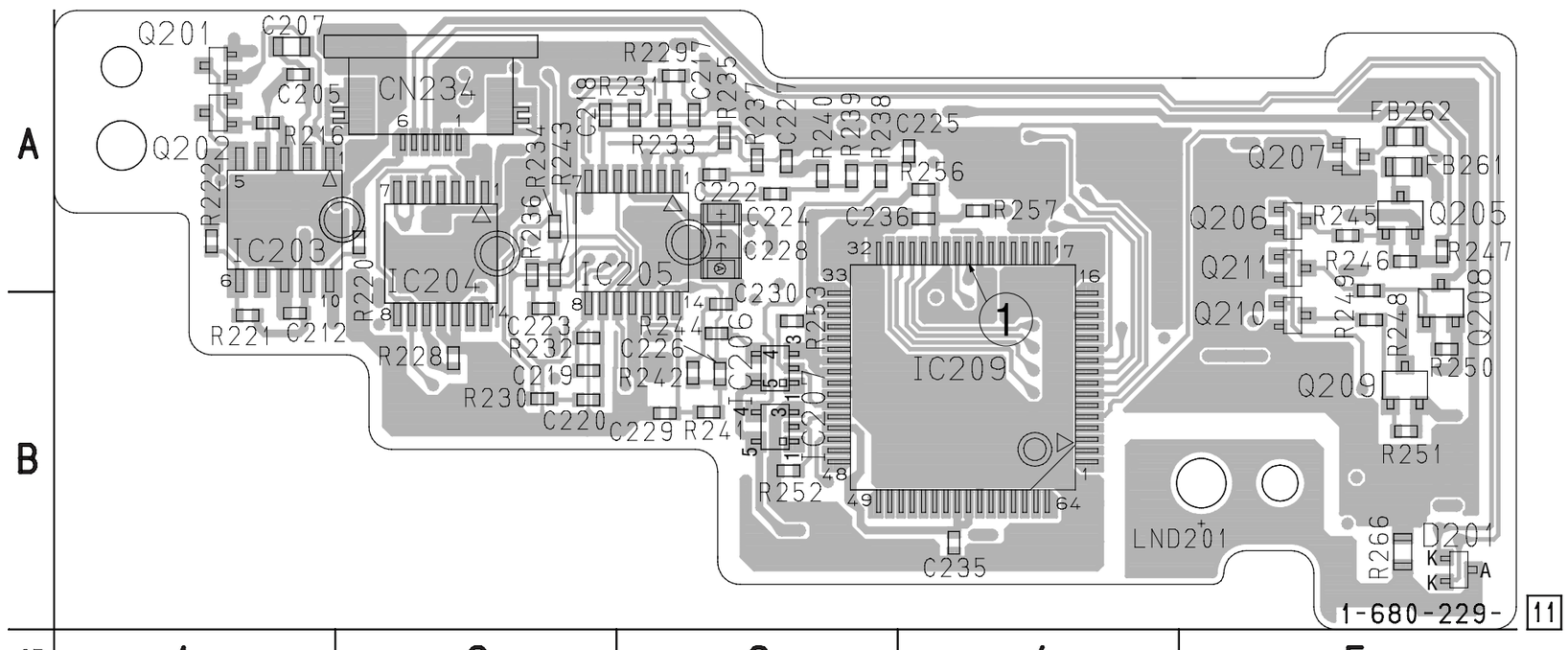
05

VP-55 (STEADY SHOT CONTROL) PRINTED WIRING BOARD

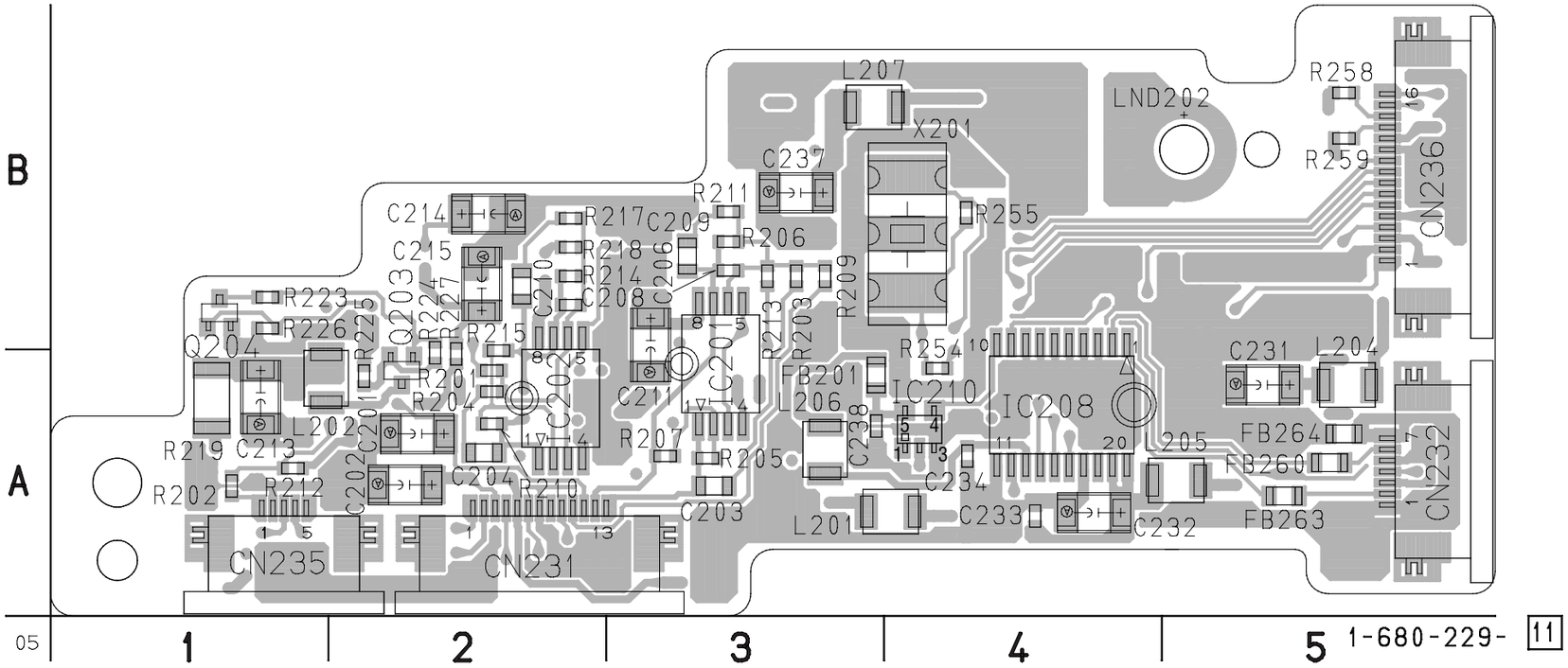
– Ref. No.: VP-55 board; 2,000 series –

- **For Printed Wiring Board.**
- VP-55 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-76 for printed parts location.
- Chip transistor

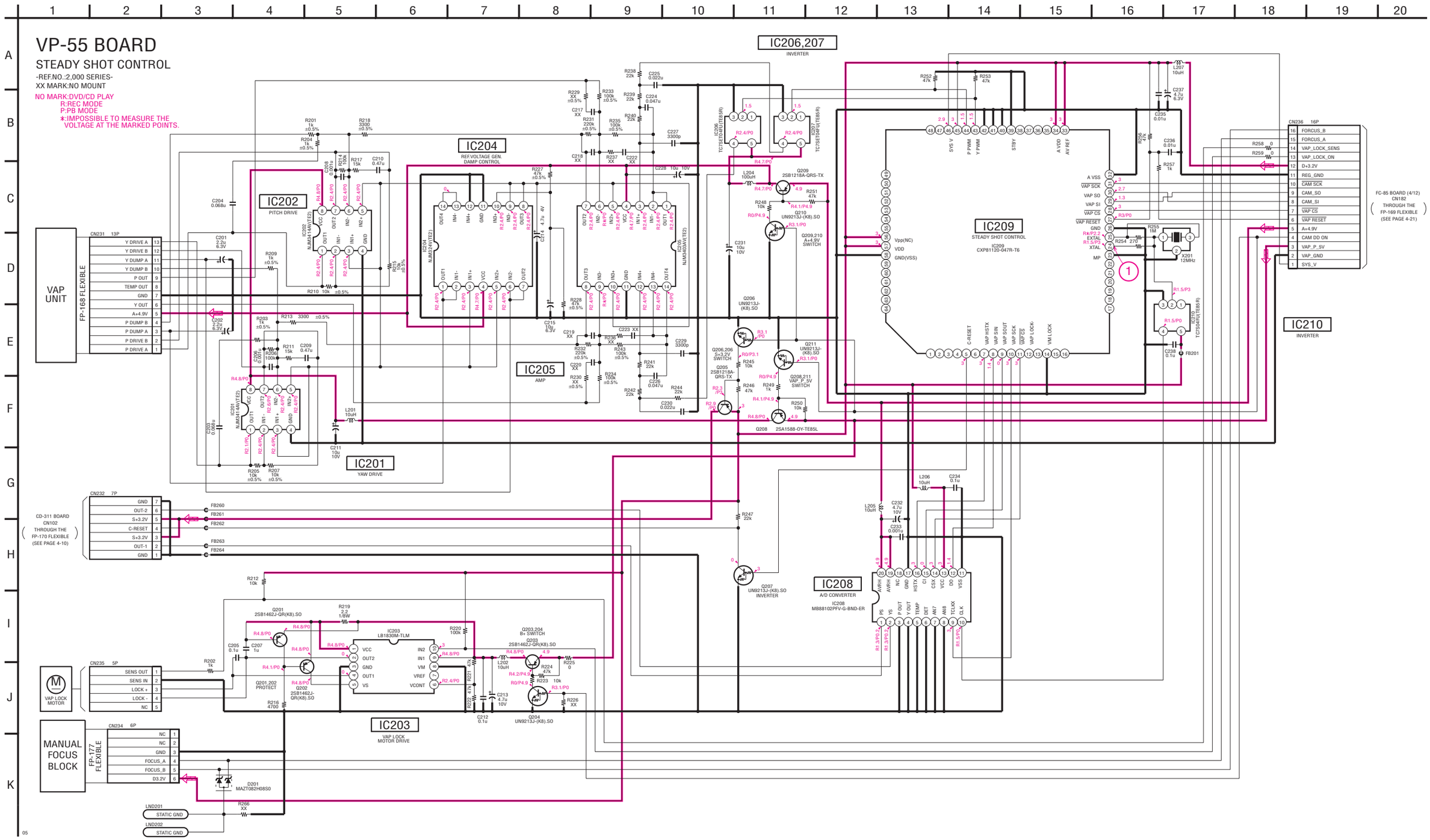
VP-55 BOARD(SIDE A)



VP-55 BOARD(SIDE B)



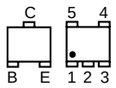
VP-55 (STEADY SHOT CONTROL) SCHEMATIC DIAGRAM • See page 4-39 for VP-55 printed wiring board. • See page 4-71 for Waveforms.

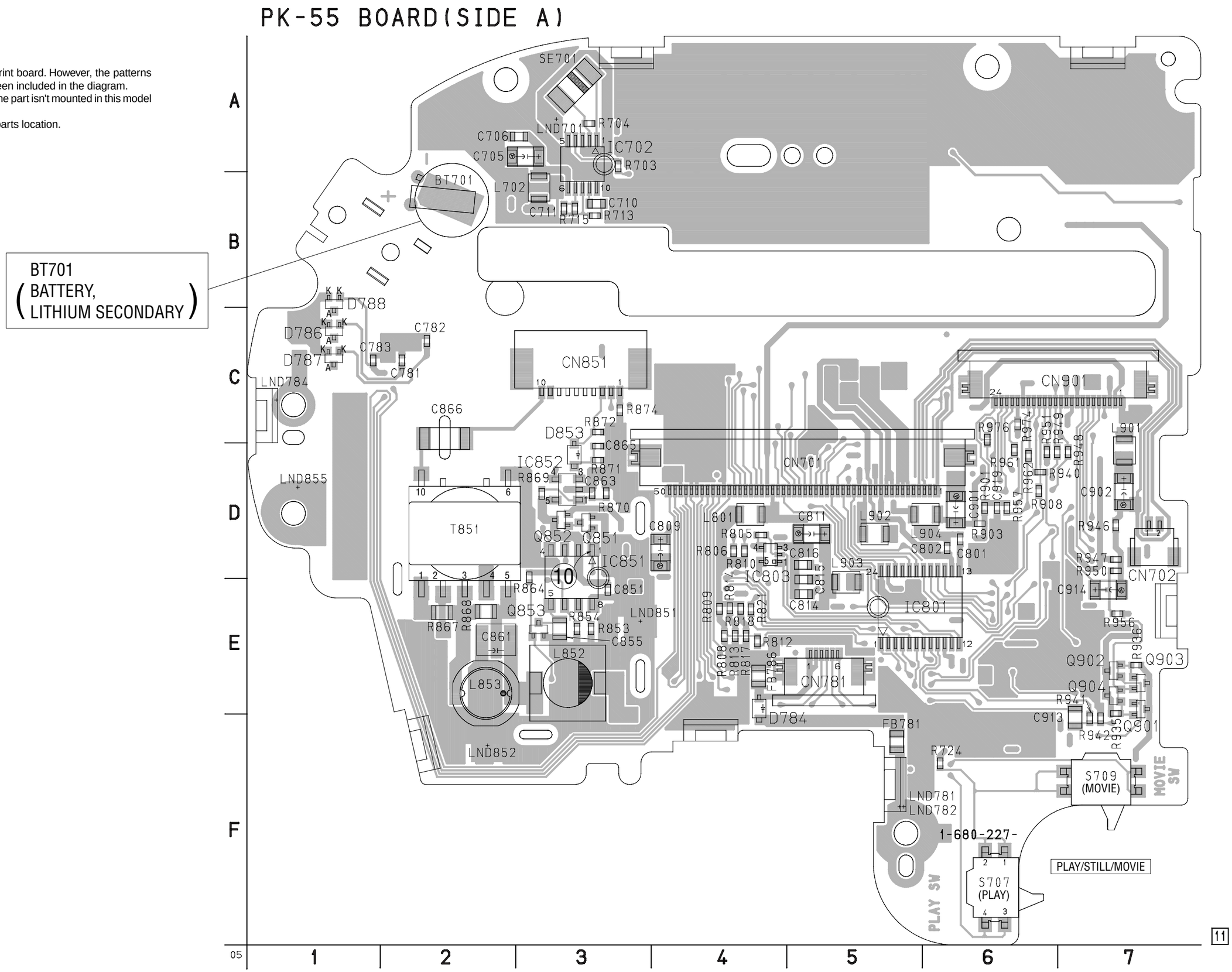


PK-55 (MODE SWITCH, A/V OUT, LCD DRIVE, LCD TIMING GENERATOR, BACK LIGHT DRIVE) PRINTED WIRING BOARD

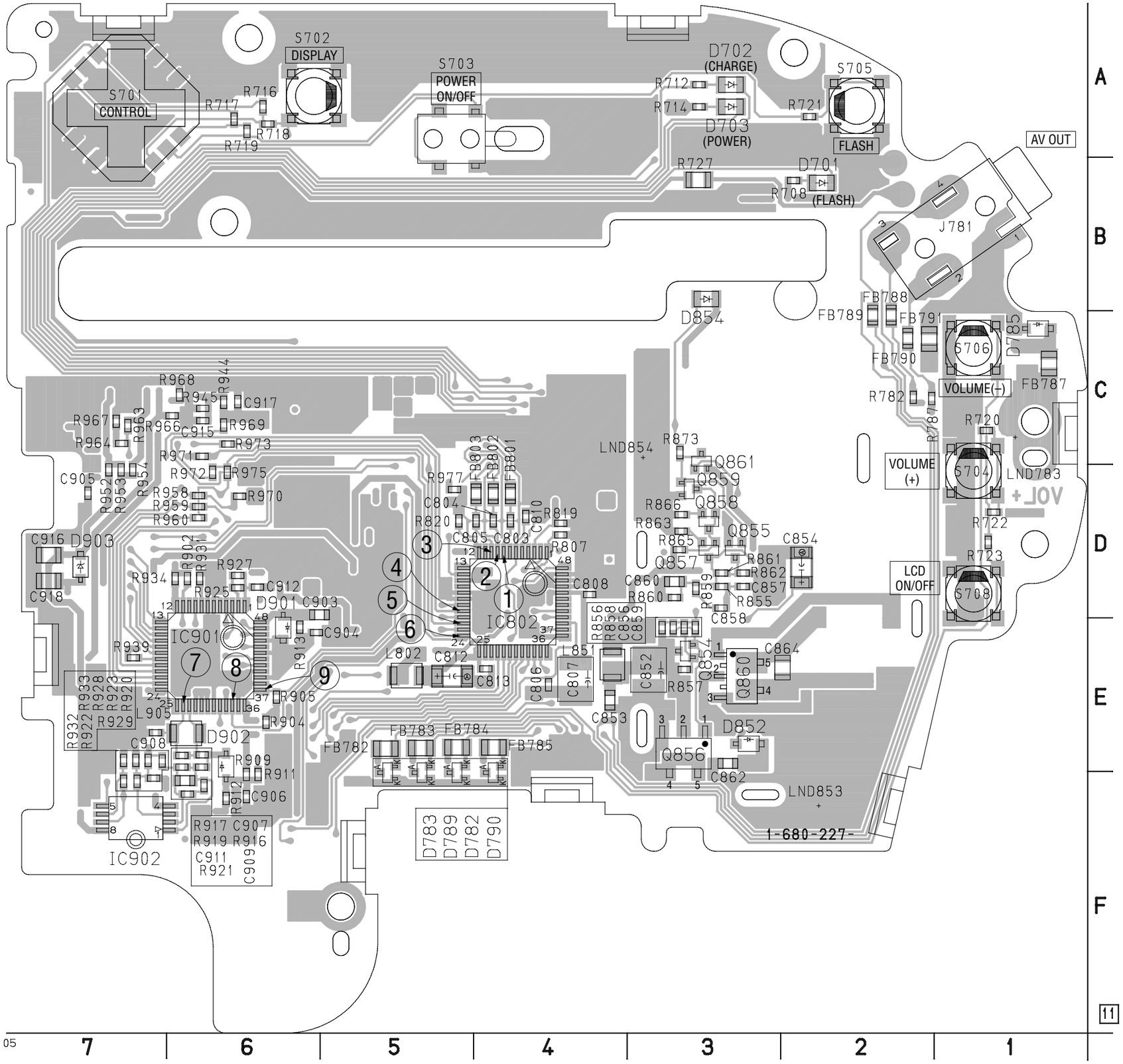
– Ref. No.: PK-55 board; 2,000 series –

- **For Printed Wiring Board.**
- PK-55 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-76 for printed parts location.
- Chip transistor





PK-55 BOARD(SIDE B)



PK-55 (MODE SWITCH, A/V OUT) SCHEMATIC DIAGRAM • See page 4-43 for PK-55 printed wiring board.

PK-55 BOARD (1/4)

MODE SWITCH,A/V OUT(LK BLOCK,JACK BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

PK-55 BOARD (2/4) ① PANEL_3.2V, D_3.2V, REG_GND
PK-55 BOARD (3/4) ② PANEL_3.2V, REG_GND, D_3.2V
PK-55 BOARD (2/4) ⑦ VG
PK-55 BOARD (2/4) ⑧ PANEL_6.5V, XHI_SCK, HI_SO, XCS_PANEL_D/A, PANEL_Y, PANEL_R-Y, PANEL_B-Y
PK-55 BOARD (3/4) ⑨ PANEL_13.2V, PANEL_-15.3V
PK-55 BOARD (3/4) ⑩ HDO, PANEL_V, PANEL_COM, HSY, MAKER_RECOG

CN701 50P

AV_JACK_IN	50	
VIDEO_OUT	49	
VIDEO_GND	48	
AUDIO_OUT	47	
AUDIO_GND	46	
REG_GND	45	
LANC_SIG	44	
LANC_JACK_IN	43	
LANC_DC	42	
EXT_STRB_ON/SENS	41	
REG_GND	40	
MOVE/XSTILL	39	
XPOWER_LED	38	
XBATT_CHG_LED	37	
SHOCK SENS	36	
KEY_AD2	35	
KEY_AD1	34	
XSTROBE_LED	33	
A_4.9V	32	
PANEL_3.2V	31	
PANEL_B-Y	30	
XCAM/PB_SW	29	
PANEL_Y	28	
XPWR_SW	27	
PANEL_R-Y	26	
EVER_3.2V	25	
MAKER_RECOG	24	
VG	23	
HSY	22	
PANEL_COM	21	
XCS_PANEL_D/A	20	
PANEL_V	19	
HI_SO	18	
HDO	17	
XHI_SCK	16	
PANEL_6.5V	15	
PANEL_-15.3V	14	
D_3.2V	13	
PANEL_13.2V	12	
PANEL_4.9V	11	
BL_UNREG	10	
BL_UNREG	9	
REG_GND(UNREG_GND)	8	
REG_GND(UNREG_GND)	7	
REG_GND	6	
XRIGHT_DOWN(NC)	5	
AU_SP+	4	
AU_SP-	3	
XLEFT_DOWN(NC)	2	
BATT	1	

FC-85 BOARD (12/12) CN801 THROUGH THE FP-175 FLEXIBLE (SEE PAGE 4-37)

PK-55 BOARD (4/4) ⑪ BL_GND, BL_UNREG, PANEL_4.9V
PK-55 BOARD (3/4) ⑫ PANEL_4.9V

CN702 2P: SP+ 1, SP- 2 → SP901 SPEAKER

D702 TLYU1002(TPX1,SONY) (CHARGE LED(AMBER)) — R710 270
D701 TLYU1002(TPX1,SONY) (FLASH LED(AMBER)) — R708 680
D703 TLGU1002(TPX1,SONY) (POWER LED(GREEN)) — R714 680

L702 47uH, C705 22u 6.3V, C706 0.22u, R703 0, R712 XX, R727 33, BT701 (LITHIUM BATTERY)

LND701 DUMMY

SE701 (SHOCK SENSOR), R704 XX

IC702 TA6009FN(EL) — SHOCK DETECT
S1A, S1B, GUARD, OUT, GND, TRIP, AO, BI, BO, VCC
C710 0.47u, R713 11k ±0.5%, R715 150k, C711 68p

R782 1k, R787 1k, C781 XX, C782 XX, C783 XX
FB789, FB788, FB790, FB791, FB787
J781 AVOUT
D785 MA111-(K8).S0
D786 MAZT082H08S0, D787 MAZT082H08S0, D788 MAZT082H08S0
LND783 FLAME_GND, LND784 FLAME_GND

DISPLAY S702, VOLUME (+) S704, VOLUME (-) S706, LCD ON/OFF S708
R718 2700, R720 4700, R722 6800, R723 33k
R716 1800
S701 CONTROL BUTTON (UP, RIGHT, SET, SET, S, LEFT, DOWN)
R719 2700, R717 1800

FLASH S705, R721 4700
S703 POWER ON/OFF
PLAY/STILL/MOVIE S707 (PLAY), S709 (MOVIE), R724 10k

FB782, FB783, FB784, FB785, FB786
D784 MA111-(K8).S0
D782 MAZT082H08S0, D783 MAZT082H08S0, D789 MAZT082H08S0, D790 MAZT082H08S0
FB781, LND781 FLAME_GND, LND782 FLAME_GND

CN781 6P

6	LANC_SIG
5	XLANC_JACK_IN
4	EXT_STB_ON
3	LANC_DC
2	JACK_GND
1	JACK_GND

FP-176 FLEXIBLE → ACC

05

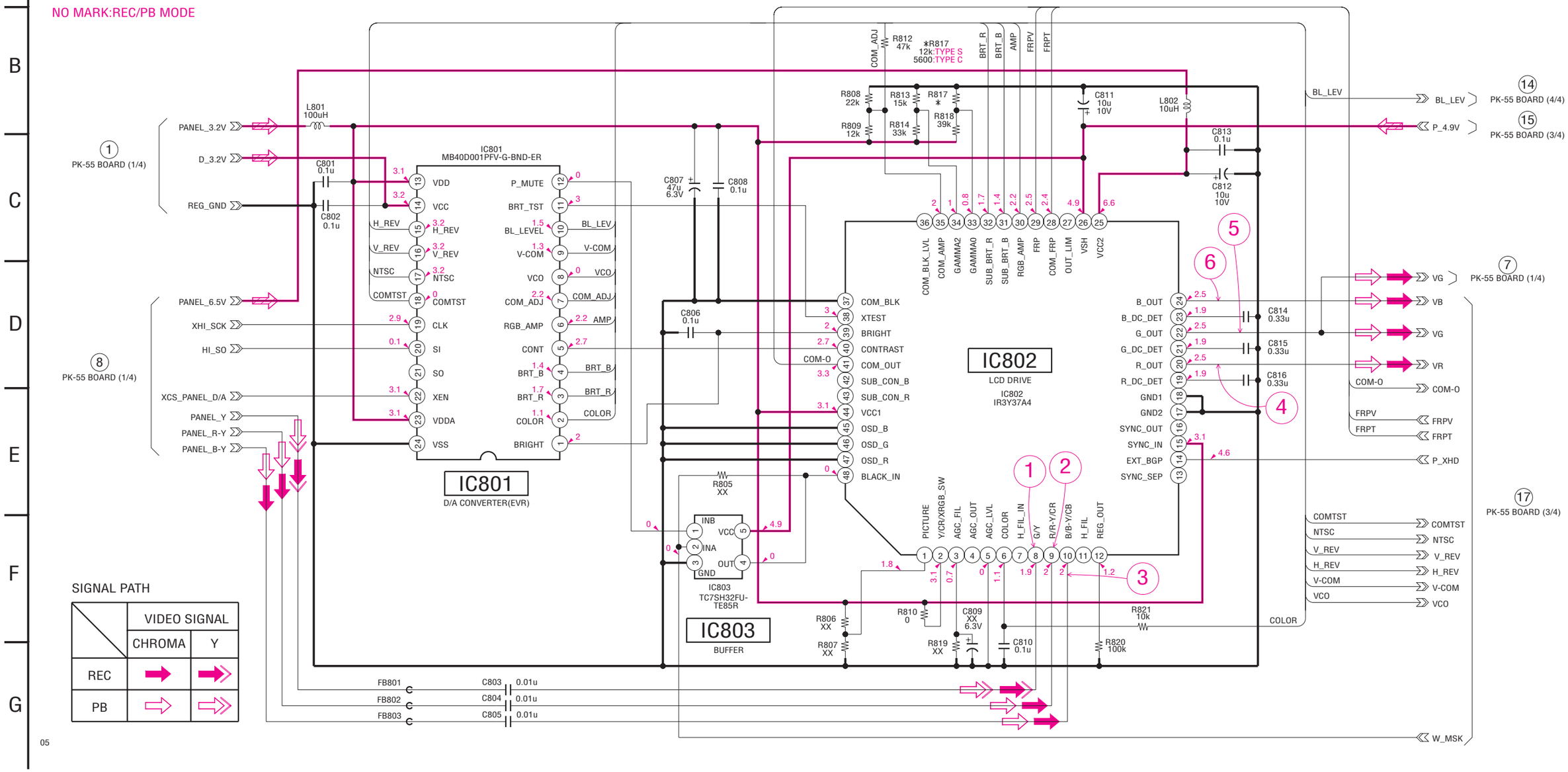
MODE SWITCH, A/V OUT
PK-55 (1/4)

PK-55 (LCD DRIVE) SCHEMATIC DIAGRAM • See page 4-43 for PK-55 printed wiring board. • See page 4-71 for waveforms.

PK-55 BOARD (2/4)

LCD DRIVE(RGB BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

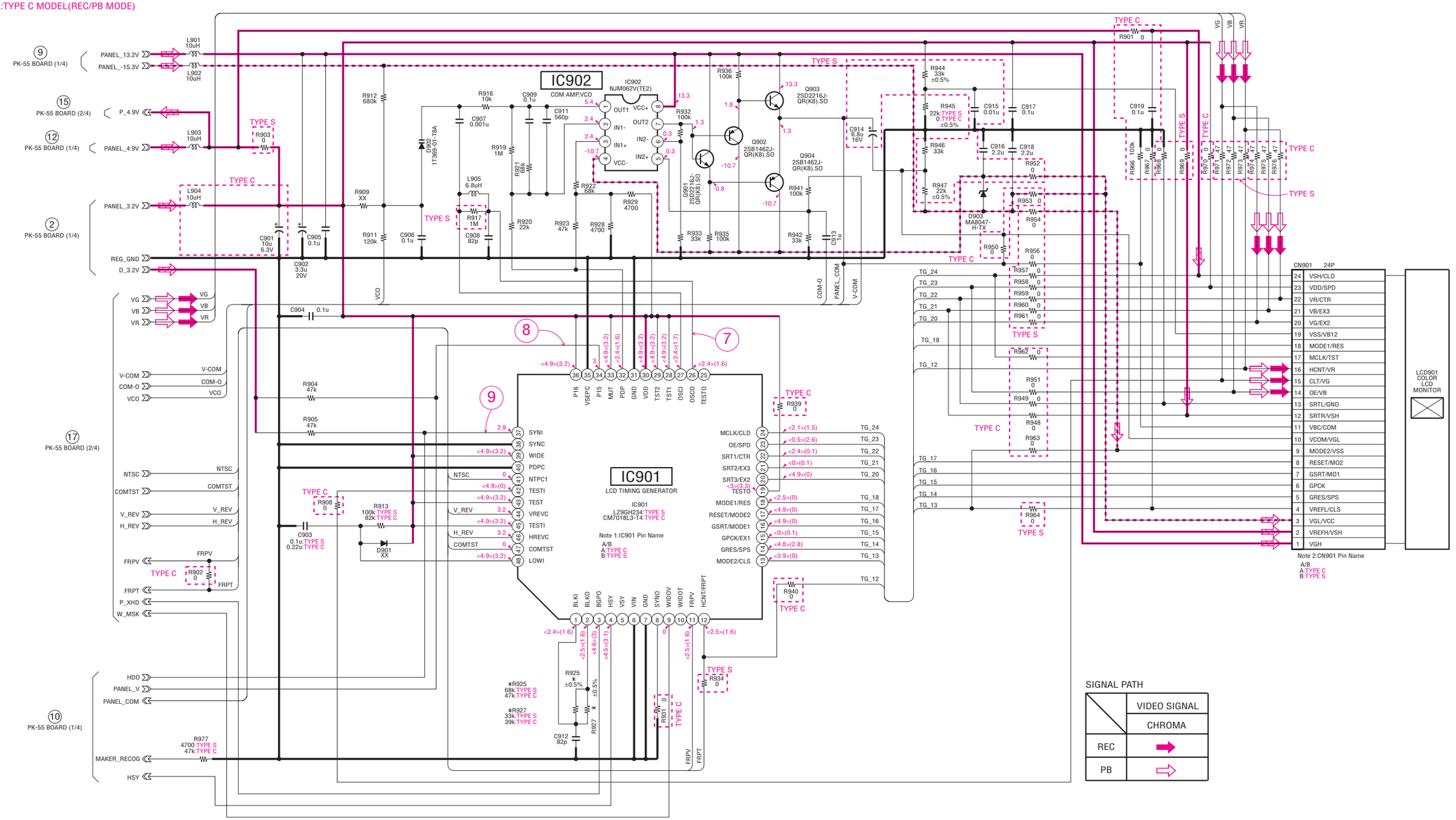


PK-55 (LCD TIMING GENERATOR) SCHEMATIC DIAGRAM • See page 4-43 for PK-55 printed wiring board. • See page 4-71 for waveforms.

PK-55 BOARD (3/4)

LCD TIMING GENERATOR(TG BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
< >:TYPE S MODEL(REC/PB MODE)
( ):TYPE C MODEL(REC/PB MODE)

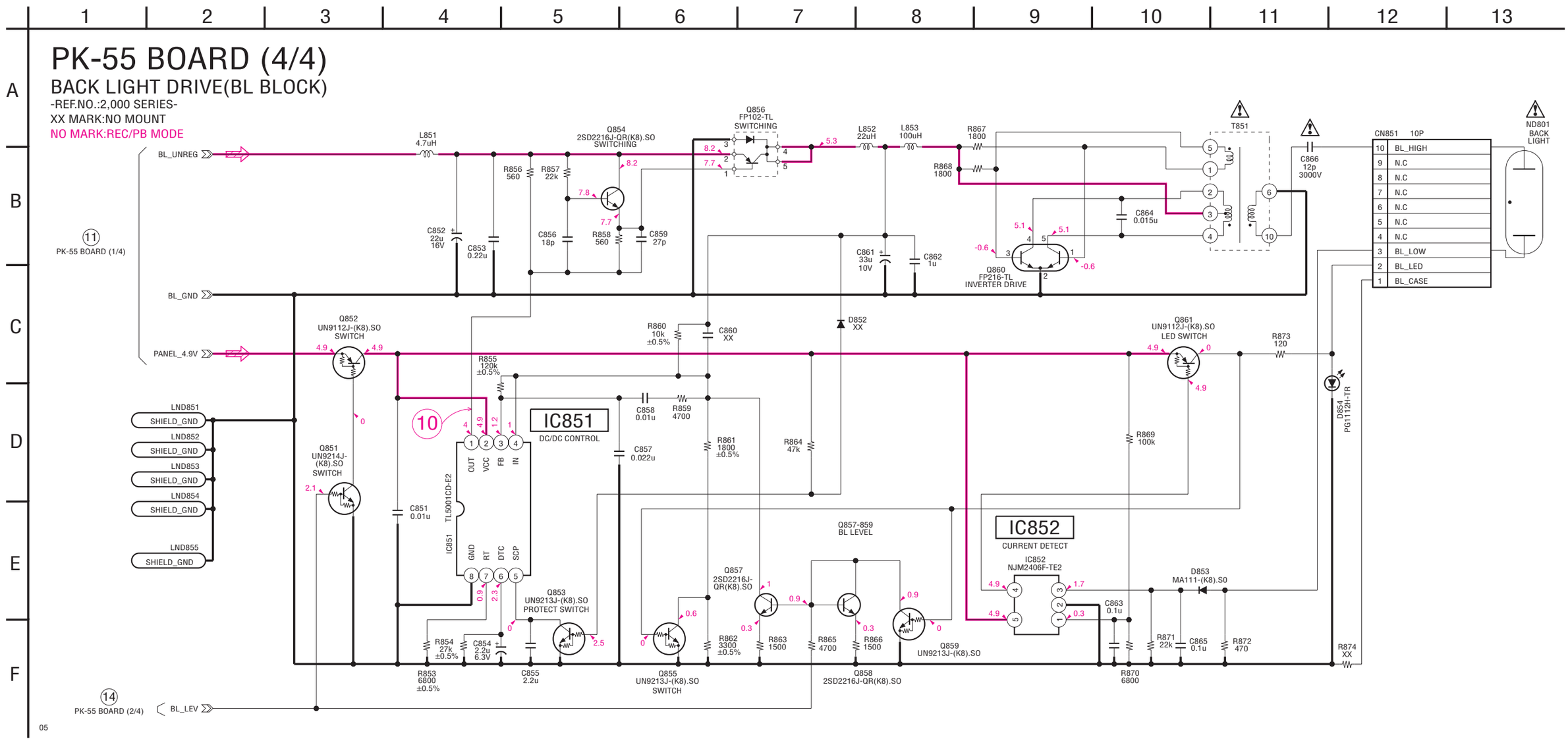


PK-55 (BACK LIGHT DRIVE) SCHEMATIC DIAGRAM • See page 4-43 for PK-55 printed wiring board. • See page 4-71 for waveforms.

PK-55 BOARD (4/4)

BACK LIGHT DRIVE(BL BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE



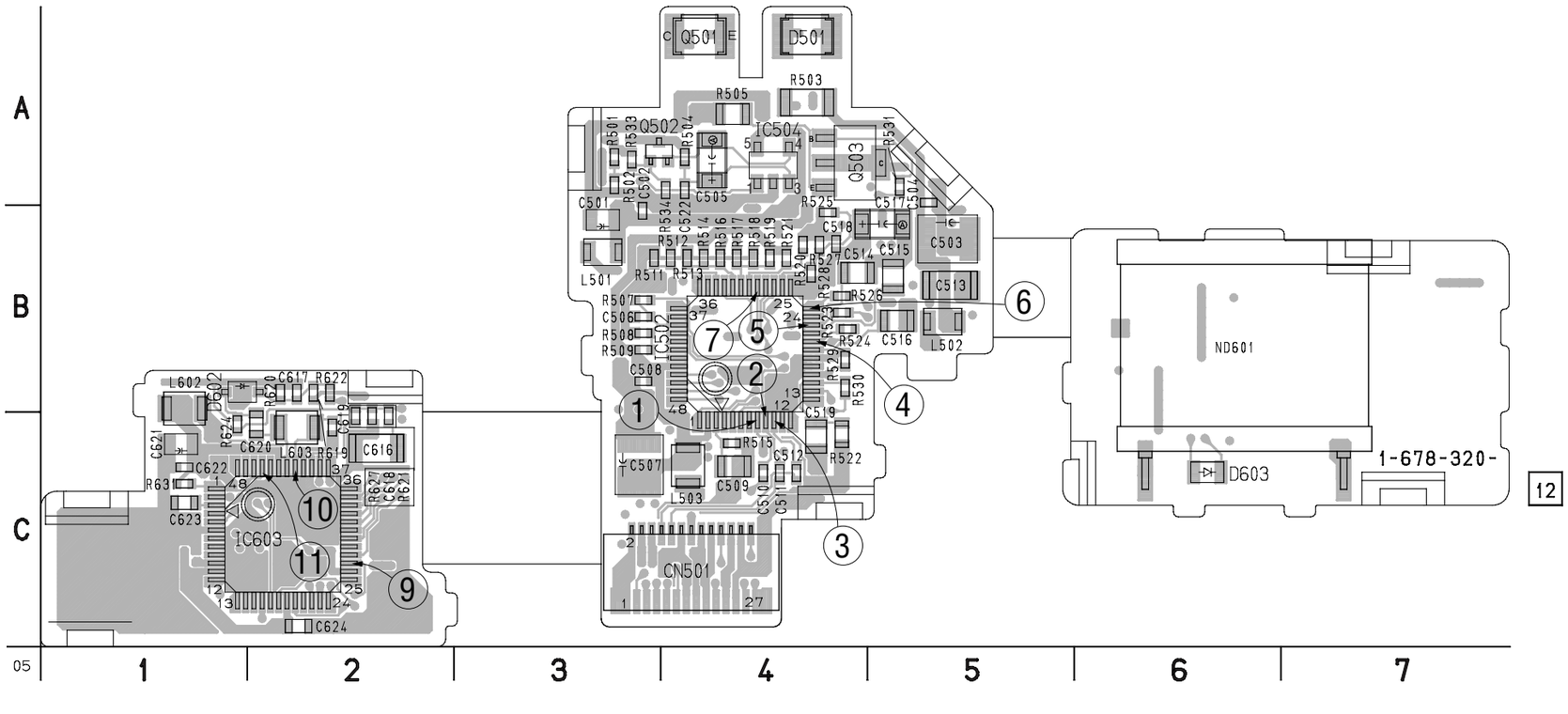
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

VF-143 (LCD DRIVE, TIMING GENERATOR, EVF LCD, BACK LIGHT) PRINTED WIRING BOARD

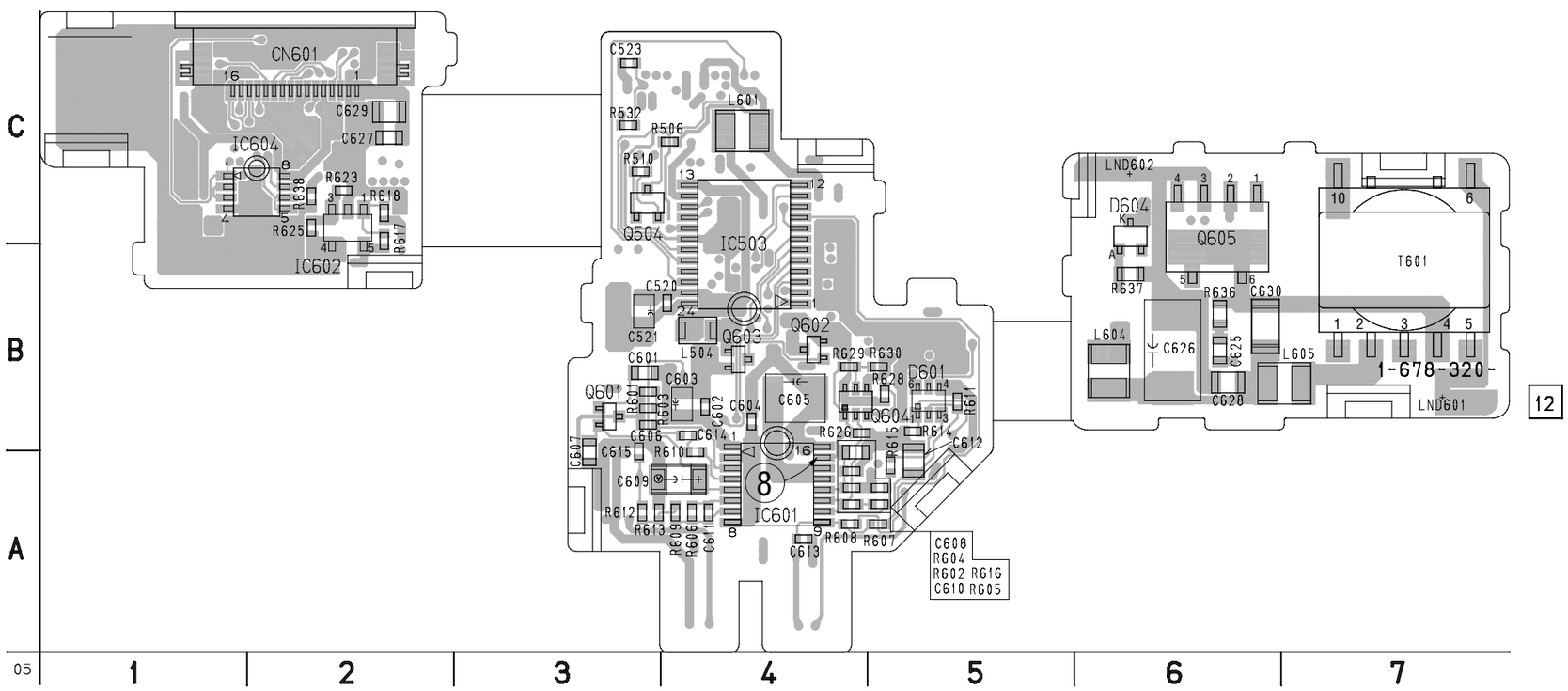
– Ref. No.: VF-143 board; 2,000 series –

- **For Printed Wiring Board.**
- VF-143 board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-77 for printed parts location.
- Chip transistor

VF-143 BOARD(SIDE A)



VF-143 BOARD(SIDE B)

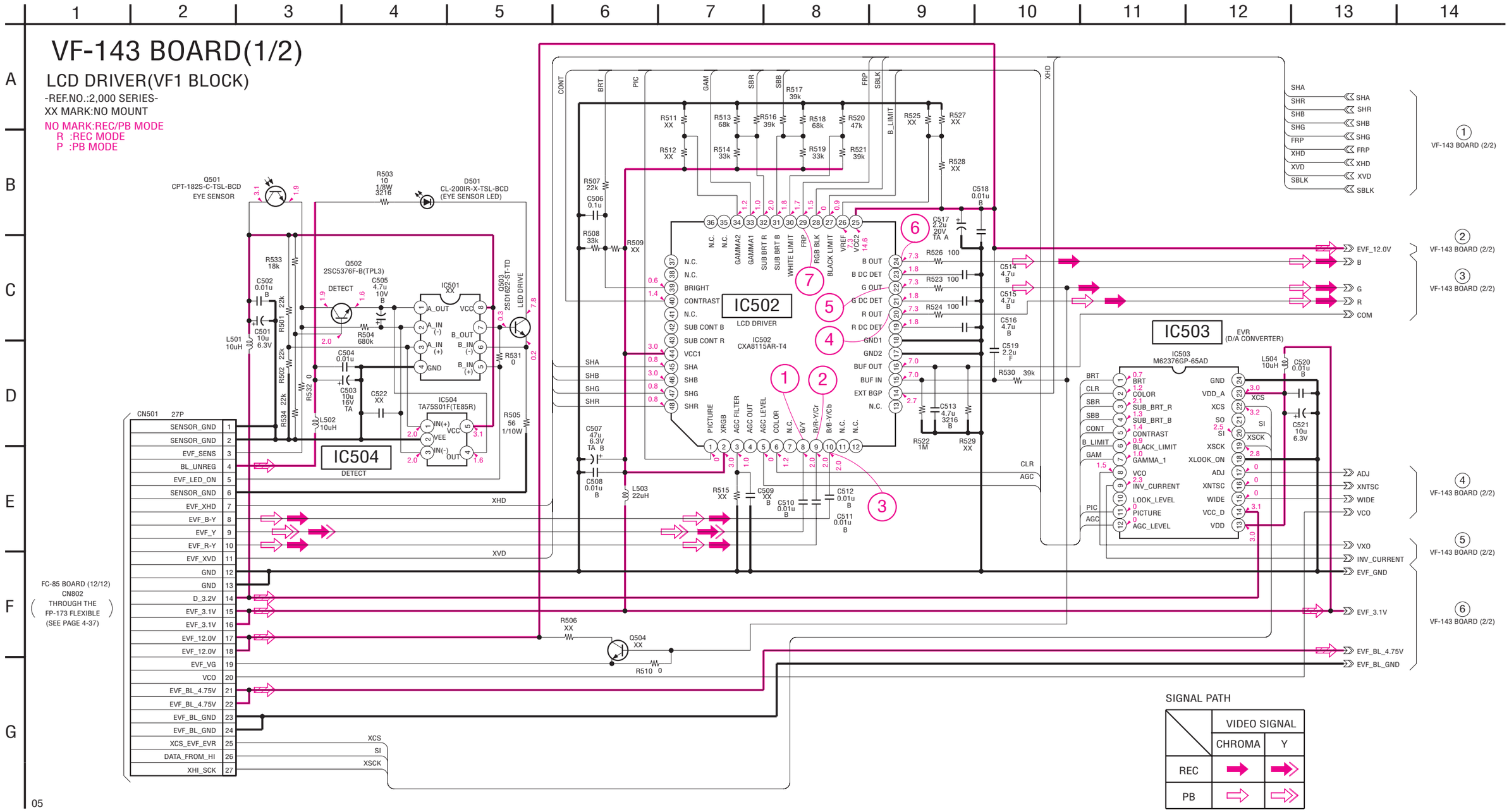


VF-143 (LCD DRIVE) SCHEMATIC DIAGRAM • See page 4-55 for VF-143 printed wiring board. • See page 4-72 for waveforms.

VF-143 BOARD(1/2)

LCD DRIVER(VF1 BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



SIGNAL PATH

	VIDEO SIGNAL	
	CHROMA	Y
REC	➡	➡
PB	⇨	⇨

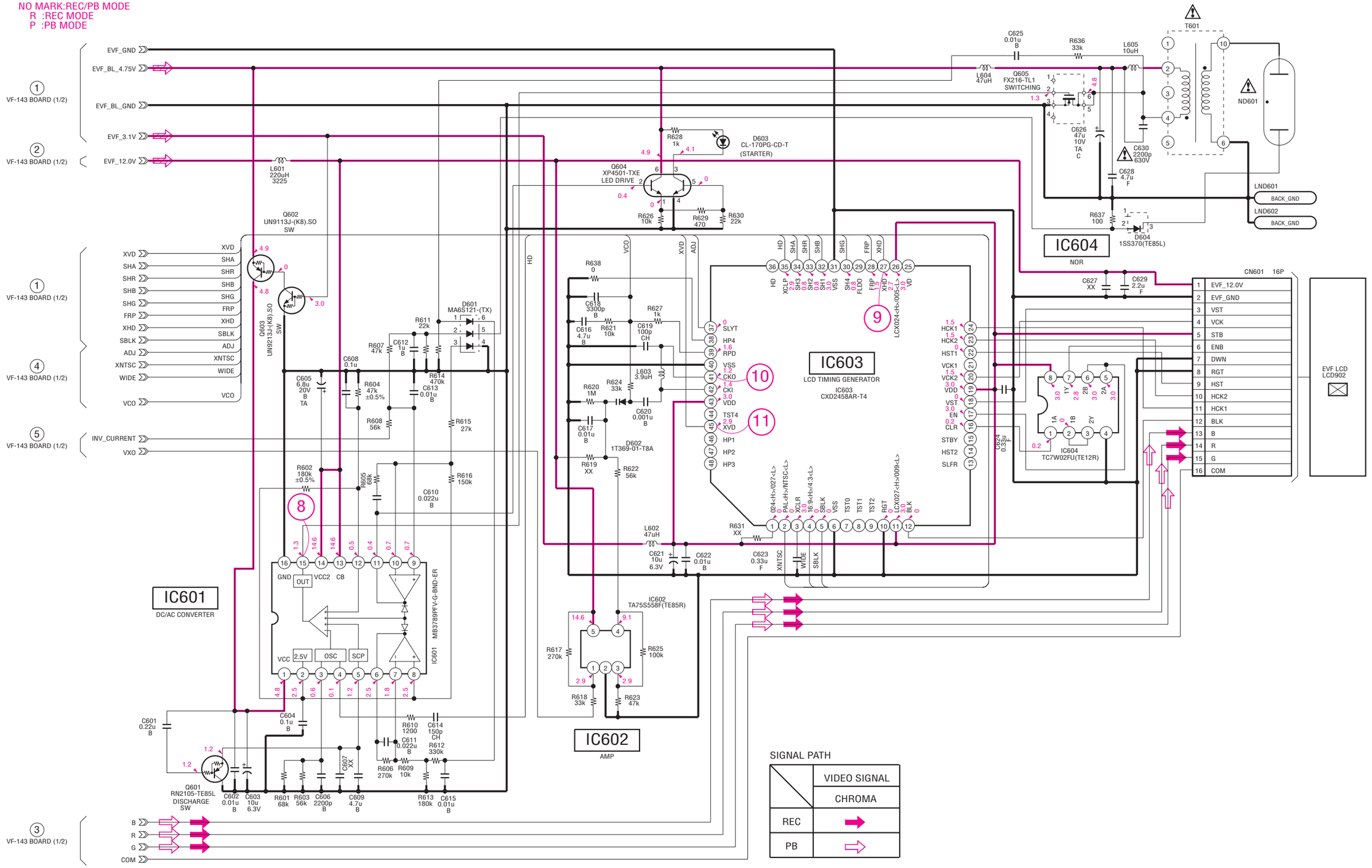
VF-143 (TIMING GENERATOR, EVF LCD, BACK LIGHT) SCHEMATIC DIAGRAM • **See page 4-55 for VF-143 printed wiring board.** • **See page 4-72 for waveforms.**

VF-143 BOARD(2/2)

TIMING GENERATOR,EVF LCD,BACK LIGHT (VF2 BLOCK)

-REF.NO.:2,000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

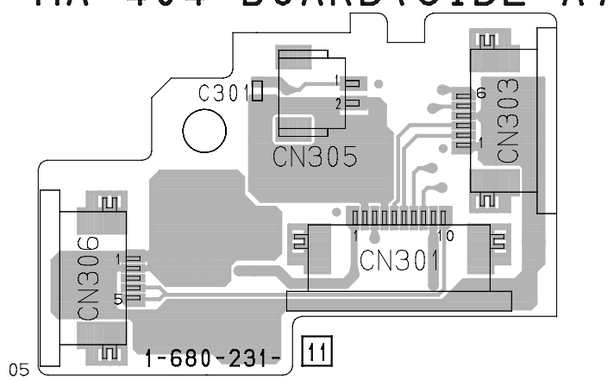
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

MA-404 (MIC AMP) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

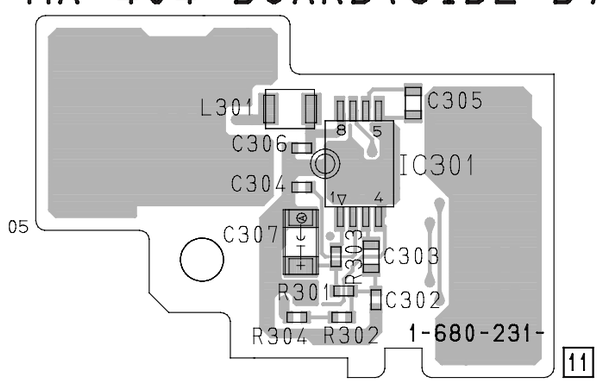
– Ref. No.: MA-404 board; 2,000 series –

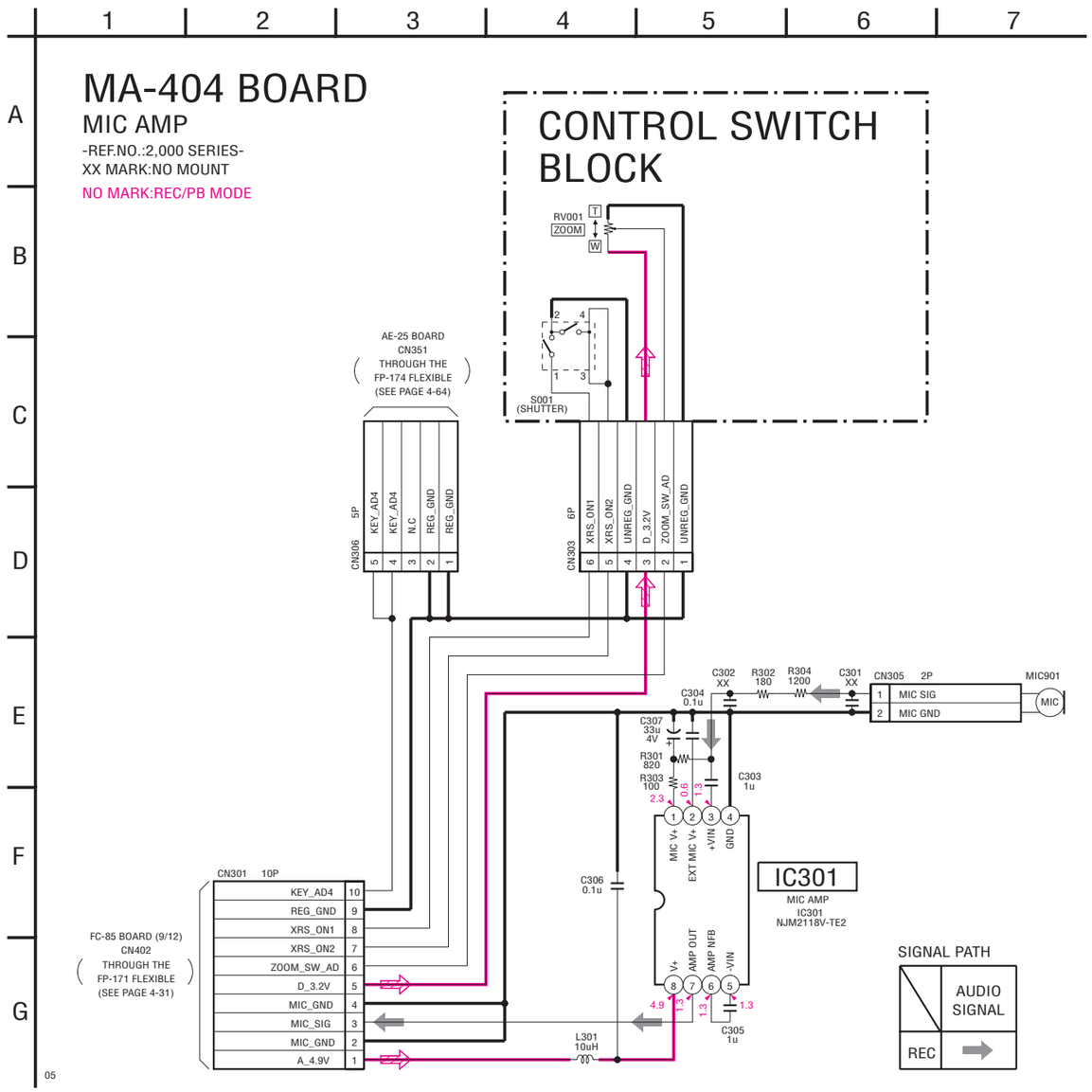
- **For Printed Wiring Board.**
- MA-404 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram..

MA-404 BOARD(SIDE A)



MA-404 BOARD(SIDE B)

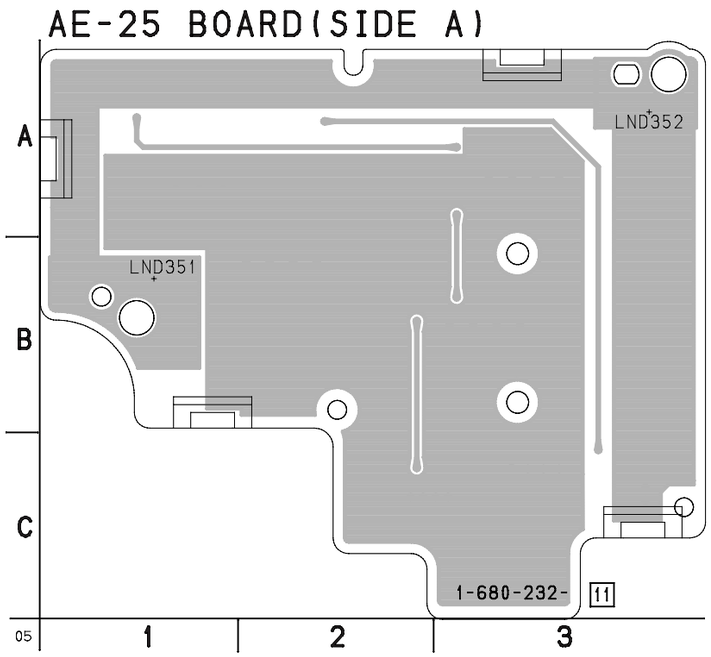


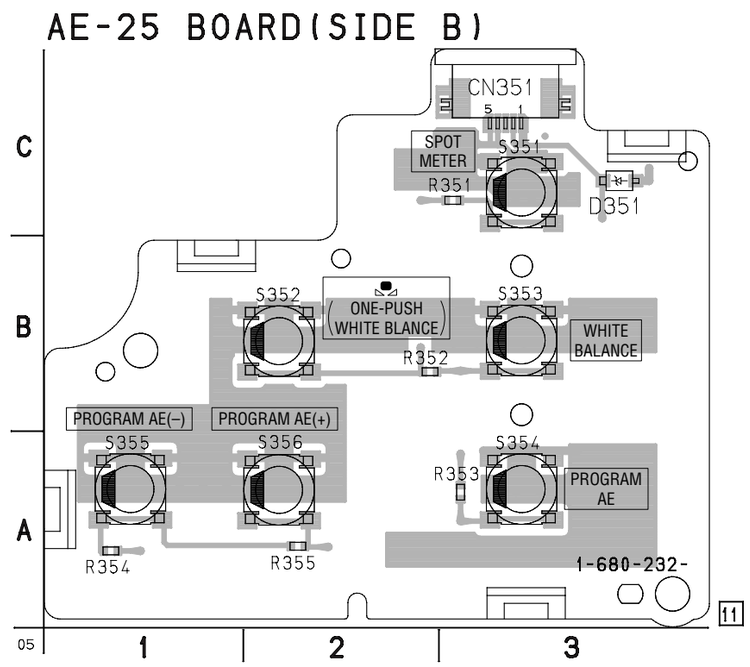


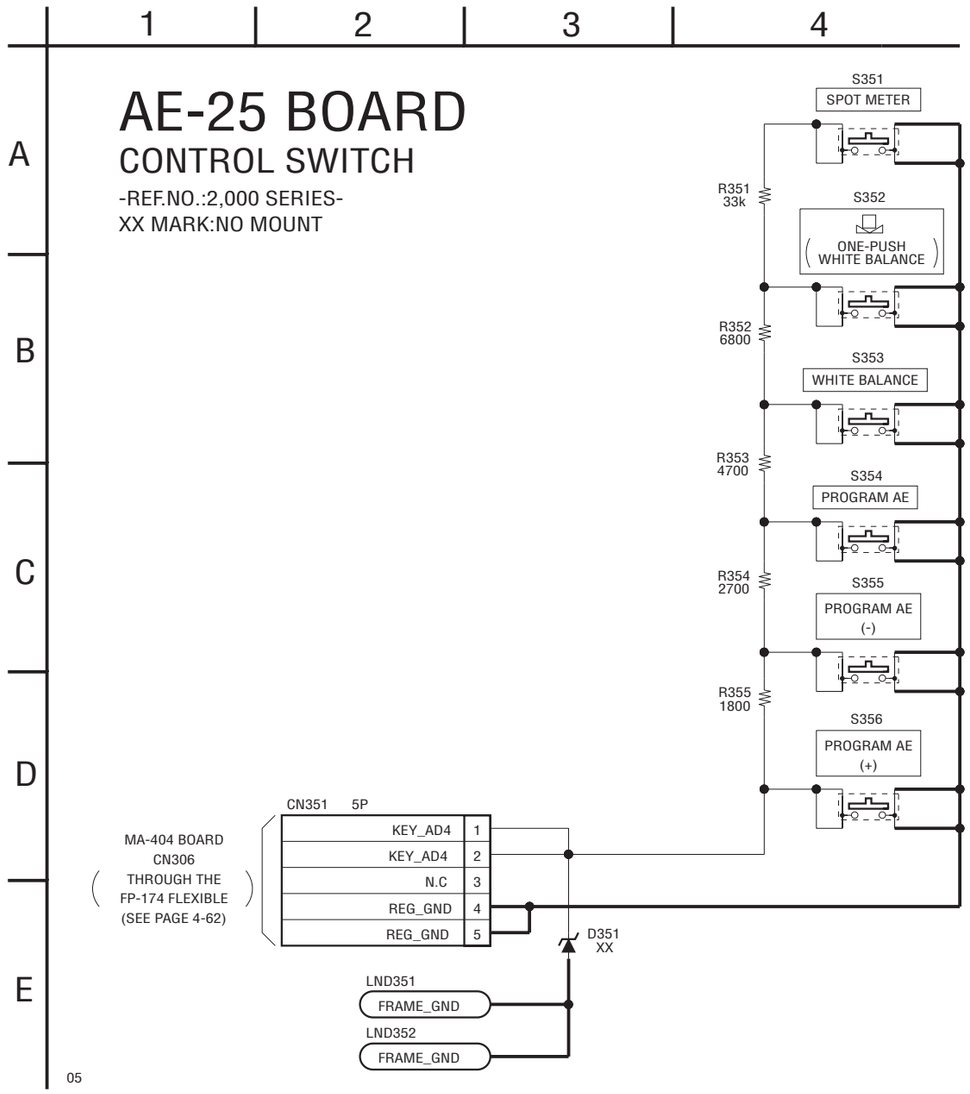
AE-25 (CONTROL SWITCH) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: AE-25 board; 2,000 series –

- **For Printed Wiring Board.**
- AE-25 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-77 for printed parts location.





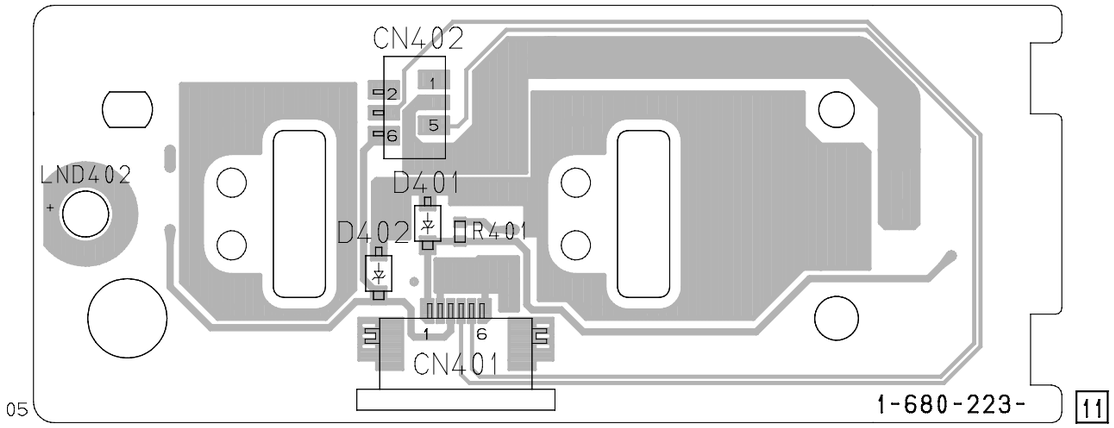


CF-83 (CONTROL SWITCH) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

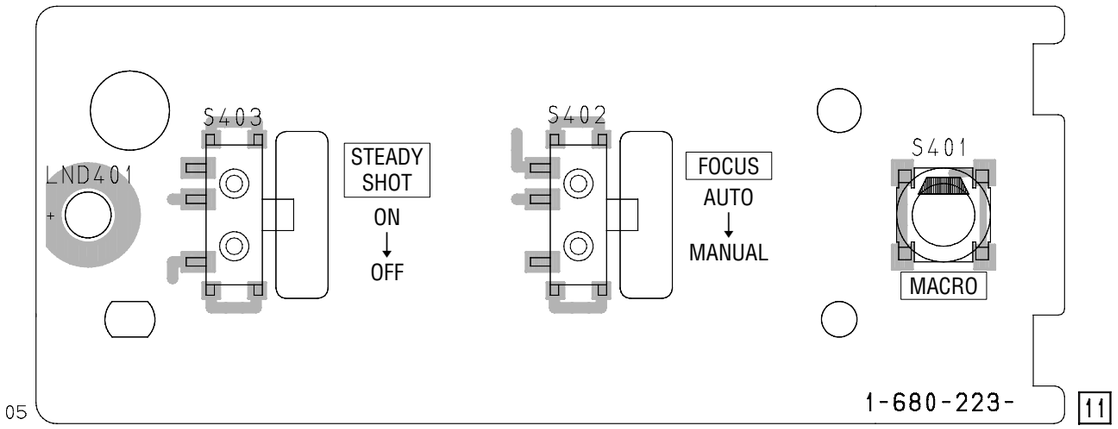
– Ref. No.: CF-83 board; 2,000 series –

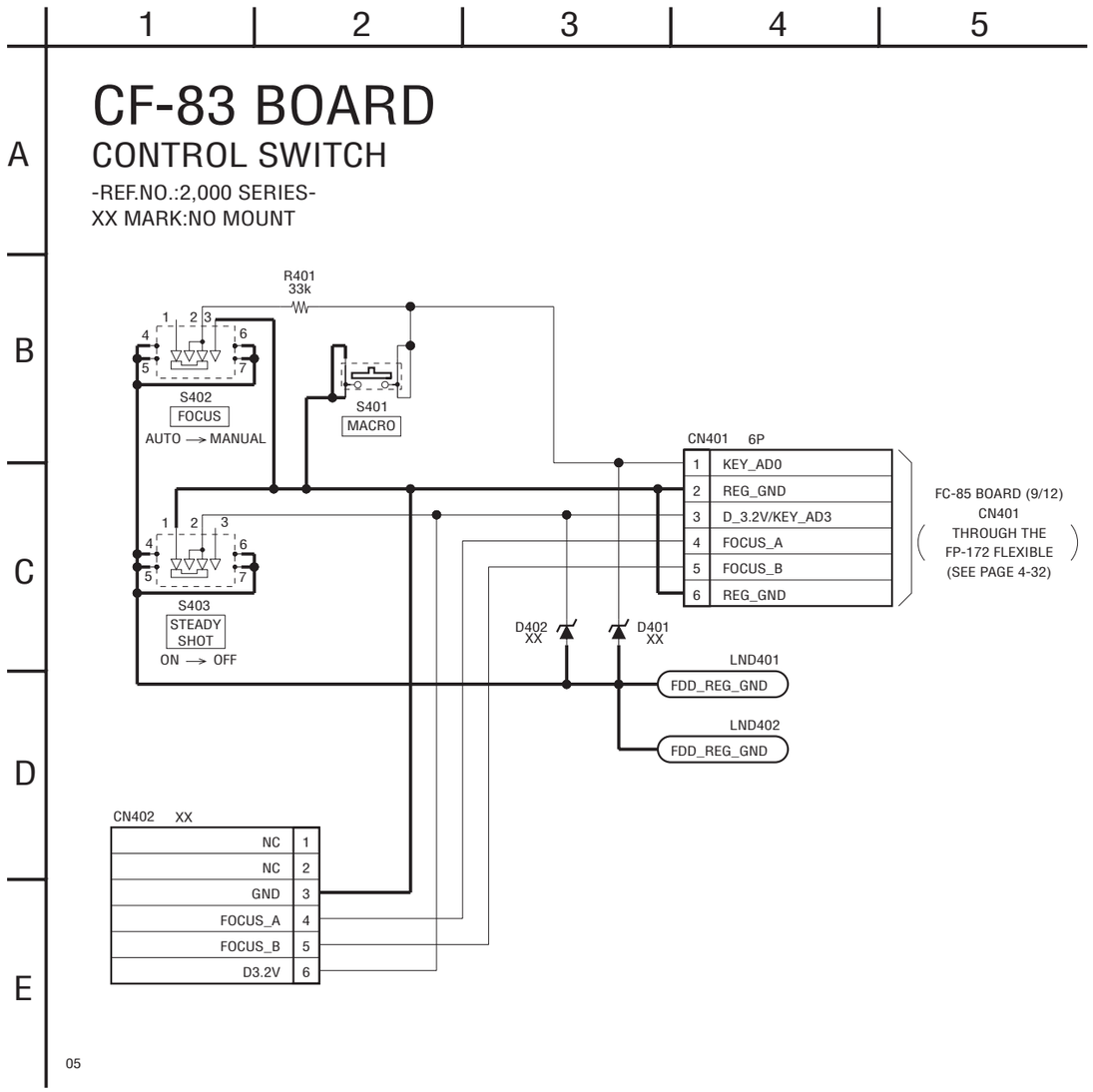
- **For Printed Wiring Board.**
- CF-83 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram..

CF-83 BOARD(SIDE A)



CF-83 BOARD(SIDE B)

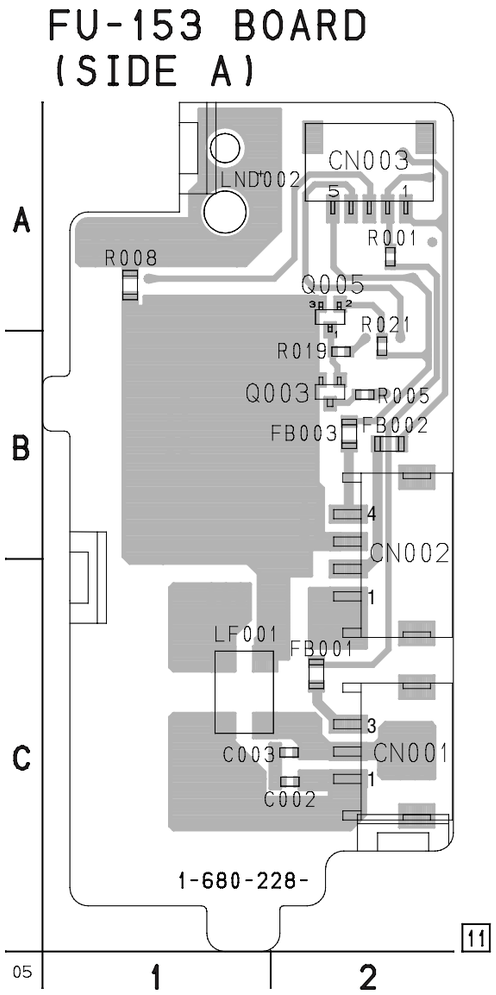


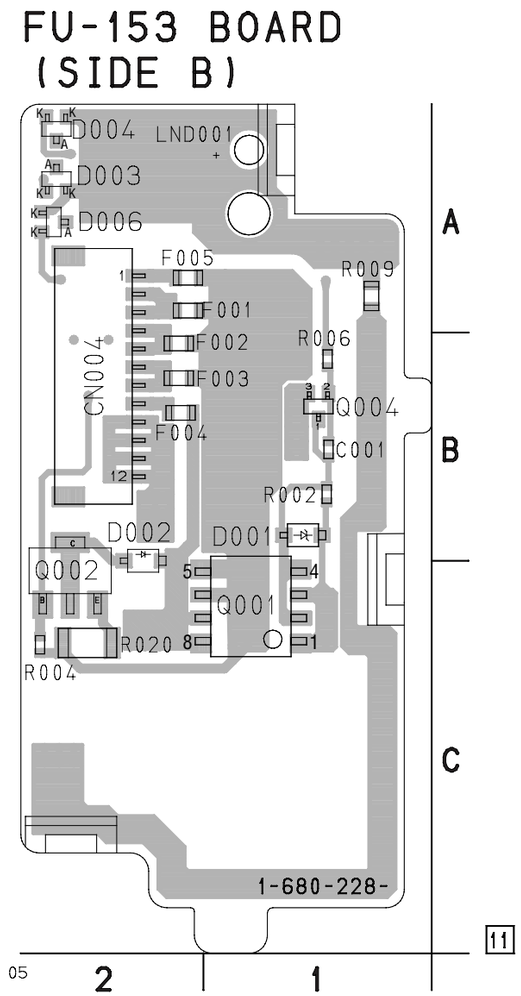


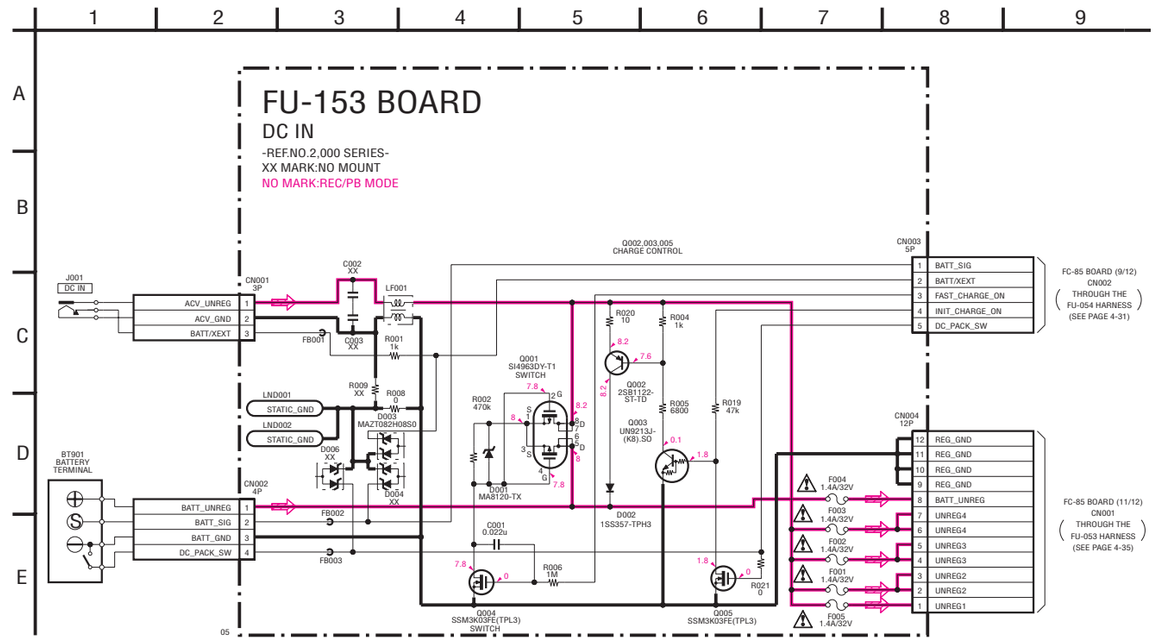
FU-153 (DC IN) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: FU-153 board; 2,000 series –

- **For Printed Wiring Board.**
- FU-153 board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-77 for printed parts location.
- Chip transistor





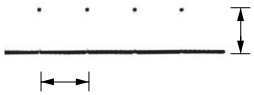


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

4-3. WAVEFORMS

CD-311 BOARD

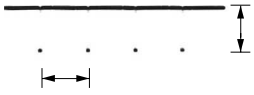
❶



104 µsec

IC101 ①, ②, ③ REC

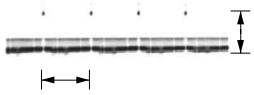
❷



104 µsec

IC101 ④, ⑤, ⑥ REC

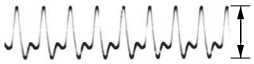
❸



104 µsec

IC101 ⑧ REC

❹



18.4 MHz

IC101 ⑭ REC

❺

17.1 MHz

IC101 ⑮ REC

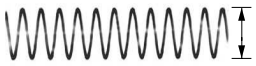
❻

17.1 MHz

IC101 ⑯ REC

VP-55 BOARD

❶

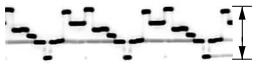


12 MHz

IC209 ㉔ REC

PK-55 BOARD

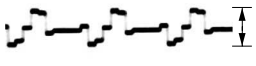
❶



H

IC802 ⑧ REC/PB

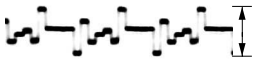
❷



H

IC802 ⑨ REC/PB

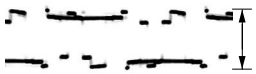
❸



H

IC802 ⑩ REC/PB

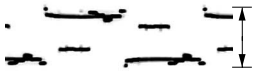
❹



2H

IC802 ⑳ REC/PB

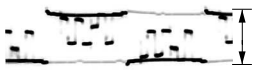
❺



2H

IC802 ㉒ REC/PB

❻



2H

IC802 ㉔ REC/PB

❼

11.7 MHz

IC901 REC/PB

❽

V

IC901 ㉞ REC/PB

❾

H

IC904 ㊲ REC/PB

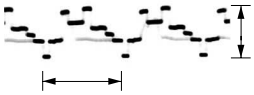
❿

480 MHz

IC851 ① REC/PB

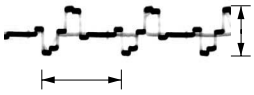
VF-143 BOARD

❶



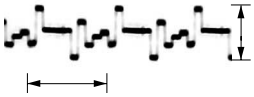
IC502 ⑧ REC/PB

❷



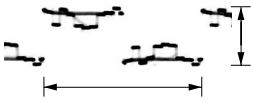
IC502 ⑨ REC/PB

❸



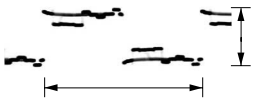
IC502 ⑩ REC/PB

❹



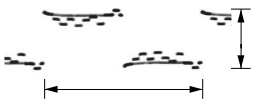
IC502 ⑳ REC/PB

❺



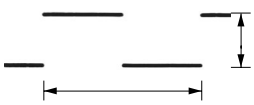
IC502 ㉒ REC/PB

❻



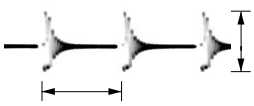
IC502 ㉔ REC/PB

❼



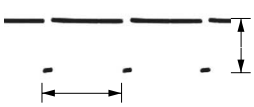
IC502 ㉙ REC/PB

❽



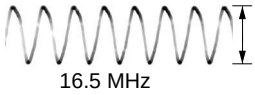
IC601 ⑮ REC/PB

❾



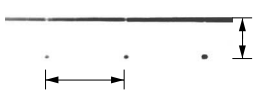
IC603 ㉗ REC/PB

❿



IC603 ㊶ REC/PB

⓫



IC603 ㊺ REC/PB

4-4. PARTS LOCATION

CD-311 BOARD (SIDE A)

C160	C-1
C161	C-2
C165	B-1
L150	B-1
R112	A-1

CD-311 BOARD (SIDE B)

C101	A-3
C102	B-2
C103	A-1
C104	A-2
C105	A-1
C106	A-2
C107	B-2
C108	A-2
C109	B-3
C150	C-3
C151	C-2
C152	C-2
C153	C-2
C156	C-2
C157	C-3
C158	C-3
C159	C-3
C162	B-2
C163	B-3
C164	B-3
CN101	A-1
CN102	B-1
IC101	B-2
IC150	C-3
L101	B-2
Q101	A-2
Q102	B-2
R101	B-1
R102	A-1
R103	A-1
R104	A-1
R105	A-2
R106	A-2
R107	A-2
R108	B-3
R109	B-3
R110	A-2
R150	C-3
R151	C-2
R152	C-2
R153	C-3
R154	C-2
R155	B-2
R156	C-2
R157	B-3
R158	B-3
R159	B-2
R160	B-3
SE150	C-2
SE151	C-2

VP-55 BOARD
(SIDE A)

C205	A-1
C207	A-1
C212	B-1
C224	A-3
C225	A-4
C226	B-3
C227	A-3
C228	A-3
C229	B-3
C230	B-3
C235	B-4
C236	A-4
CN234	A-2
D201	B-5
FB261	A-5
FB262	A-5
IC203	A-1
IC204	A-2
IC205	A-3
IC206	B-3
IC207	B-3
IC209	B-4
Q201	A-1
Q202	A-1
Q205	A-5
Q206	A-5
Q207	A-5
Q208	B-5
Q209	B-5
Q210	B-5
Q211	A-5
R216	A-1
R220	A-2
R221	B-1
R222	A-1
R256	A-4
R257	A-4
R228	B-2
R231	A-3
R232	B-2
R233	A-3
R234	A-2
R235	A-3
R238	A-3
R239	A-3
R240	A-3
R241	B-3
R242	B-3
R243	A-2
R244	B-3
R245	A-5
R246	A-5
R247	A-5
R248	B-5
R249	B-5
R250	B-5
R251	B-5
R252	B-3
R253	B-3

VP-55 BOARD
(SIDE B)

C201	A-2
C202	A-2
C203	A-3
C204	A-2
C206	B-3
C208	B-2
C209	B-3
C210	B-2
C211	A-3
C213	A-1
C214	B-2
C215	B-2
C231	A-5
C232	A-4
C233	A-4
C234	A-4
C237	B-3
C238	A-3
CN231	A-2
CN232	A-5
CN235	A-1
CN236	B-5
FB201	A-3
FB260	A-5
FB263	A-5
FB264	A-5
IC201	A-3
IC202	A-2
IC208	A-4
IC210	A-4
L201	A-3
L202	A-1
L204	A-5
L205	A-5
L206	A-3
L207	B-3
Q203	A-2
Q204	B-1
R201	A-2
R202	A-1
R203	B-3
R204	A-2
R205	A-3
R206	B-3
R207	A-3
R209	B-3
R210	A-2
R211	B-3
R212	A-1
R213	B-3
R214	B-2
R215	B-2
R217	B-2
R218	B-2
R219	A-1
R223	B-1
R224	B-2
R225	A-2
R227	B-2
R254	A-4
R255	B-4
R258	B-5
R259	B-5
X201	B-4

PK-55 BOARD
(SIDE A)

BT701	B-2
C705	A-2
C706	A-2
C710	B-3
C711	B-3
C801	D-6
C802	D-6
C811	D-5
C814	E-4
C815	D-5
C816	D-5
C851	E-3
C855	E-3
C861	E-2
C863	D-3
C865	D-3
C866	C-2
C901	D-6
C902	D-7
C913	F-7
C914	E-7
C919	D-6
CN701	D-5
CN702	D-7
CN781	E-5
CN851	C-3
CN901	C-7
D784	E-4
D786	C-1
D787	C-1
D788	B-1
D853	D-3
FB781	F-5
FB786	E-4
IC702	A-3
IC801	E-6
IC803	D-4
IC851	D-3
IC852	D-3
L702	B-3
L801	D-4
L852	E-3
L853	E-2
L901	C-7
L902	D-5
L903	D-5
L904	D-6
Q851	D-3
Q852	D-3
Q853	E-3
Q901	F-1
Q902	E-7
Q903	E-7
Q904	E-7
R703	A-3
R713	B-3
R715	B-3
R724	F-6
R808	E-4
R809	E-4
R810	D-4
R812	E-4
R813	E-4
R814	E-4
R817	E-4
R818	E-4
R821	E-4
R853	E-3
R854	E-3
R864	E-3
R867	E-2
R868	E-2
R869	D-3
R870	D-3
R871	D-3
R872	C-3
R901	D-6
R903	D-6
R908	D-6
R935	E-7
R936	E-7
R940	D-6
R941	F-7
R942	F-7
R946	D-7
R947	D-7
R948	D-7
R949	C-6
R950	D-7
R951	C-6
R956	E-7
R957	D-6
R961	D-6
R962	D-6
R974	C-6
R976	C-6
S707	F-6
S709	F-7
SE701	A-3
T851	D-2

PK-55 BOARD
(SIDE B)

C803	D-4
C804	D-4
C805	D-4
C806	E-4
C807	E-4
C808	D-4
C810	D-4
C812	E-5
C813	E-4
C852	E-3
C853	E-4
C854	D-2
C856	E-3
C857	D-3
C858	D-3
C859	E-3
C862	E-3
C864	E-2
C903	D-6
C904	E-6
C905	D-7
C906	F-6
C907	F-6
C908	E-7
C909	F-6
C911	F-6
C912	D-6
C915	C-6
C916	D-7
C917	C-6
C918	D-7
D701	B-2
D702	A-3
D703	A-3
D782	F-5
D783	F-5
D785	C-1
D789	F-5
D790	F-4
D854	C-3
D902	E-6
D903	D-7
FB782	E-5
FB783	E-5
FB784	E-5
FB785	E-4
FB787	C-1
FB788	C-2
FB789	C-2
FB790	C-2
FB791	C-2
FB801	D-4
FB802	D-4
FB803	D-4
IC802	D-4
IC901	E-6
IC902	F-7
J781	B-1
L802	E-5
L851	E-4
L905	E-6
Q854	E-3
Q855	D-3
Q856	E-3
Q857	D-3
Q858	D-3
Q859	D-3
Q860	E-3
Q861	D-3
R708	B-2
R712	A-3
R714	A-3
R716	A-6
R717	A-6
R718	A-6
R719	A-6
R720	C-1
R721	A-2
R722	D-1
R723	D-1
R727	B-3
R782	C-2
R787	C-1
R820	D-5
R855	D-3
R856	E-3
R857	E-3
R858	E-3
R859	D-3
R860	D-3
R861	D-3
R862	D-3
R863	D-3
R865	D-3
R866	D-3
R873	C-3
R902	D-6
R904	E-6
R905	E-6
R911	F-6
R912	F-6
R913	E-6
R916	F-6
R917	F-6
R919	F-6
R920	E-7
R921	F-6
R922	F-7
R923	E-7
R925	D-6
R927	D-6
R928	E-7
R929	F-7
R931	D-6
R932	F-7
R933	E-7
R934	D-7
R939	E-7
R944	C-6
R945	C-6
R952	D-7
R953	D-7
R954	D-7
R958	D-6
R959	D-6
R960	D-6
R963	C-7
R964	C-7
R966	C-6
R967	C-7
R968	C-6
R969	C-6
R970	D-6
R971	C-6
R972	D-6
R973	C-6
R975	D-6
R977	D-5
S701	A-7
S702	A-6
S703	A-5
S704	D-1
S705	A-2
S706	C-1
S708	D-1

VF-143 BOARD
(SIDE A)

C501	B-3
C502	A-3
C503	B-5
C504	A-5
C505	A-4
C506	B-3
C507	C-3
C508	B-3
C510	C-4
C511	C-4
C512	C-4
C513	B-5
C514	B-4
C515	B-5
C516	B-5
C517	B-5
C518	B-4
C519	C-4
C616	C-2
C617	B-2
C618	C-2
C619	C-2
C620	C-2
C621	C-1
C622	C-1
C623	C-1
C624	C-2
CN501	C-4
D501	A-4
D602	B-1
D603	C-6
IC502	B-4
IC504	A-4
IC603	C-2
L501	B-3
L502	B-5
L503	C-4
L602	B-1
L603	C-2
ND601	B-6
Q501	A-4
Q502	A-4
Q503	A-4
R501	A-3
R502	A-3
R503	A-4
R504	A-4
R505	A-4
R507	B-3
R508	B-3
R513	B-4
R514	B-4
R516	B-4
R517	B-4
R518	B-4
R519	B-4
R520	B-4
R521	B-4
R522	C-4
R523	B-4
R524	B-4
R526	B-4
R530	B-4
R531	A-5
R533	A-3
R534	B-4
R620	B-2
R621	C-2
R622	B-2
R624	C-1
R627	C-2

VF-143 BOARD
(SIDE B)

C520	B-4
C521	B-3
C601	B-3
C602	B-4
C603	B-4
C604	B-4
C605	B-4
C606	B-3
C608	A-4
C609	A-4
C610	A-4
C611	A-4
C612	A-5
C613	A-4
C614	B-4
C615	A-3
C625	B-6
C626	B-6
C628	B-6
C629	C-2
C630	B-6
CN601	C-2
D601	B-5
D604	C-6
IC503	B-4
IC601	A-4
IC602	C-2
IC604	C-2
L504	B-4
L601	C-4
L604	B-6
L605	B-7
Q601	B-3
Q602	B-4
Q603	B-4
Q604	B-4
Q605	B-6
R532	C-3
R510	C-3
R601	B-3
R602	A-4
R603	B-3
R604	A-4
R605	A-5
R606	A-4
R607	A-5
R608	A-4
R609	A-4
R610	A-4
R611	B-5
R612	A-3
R613	A-3
R614	B-5
R615	A-5
R616	A-5
R617	C-2
R618	C-2
R623	C-2
R625	C-2
R626	B-4
R628	B-5
R629	B-4
R630	B-5
R636	B-6
R637	B-6
R638	C-2
T601	B-7

AE-25 BOARD
(SIDE B)

CN351	C-3
R351	C-3
R352	B-2
R353	A-3
R354	A-1
R355	A-2
S351	C-3
S352	B-2
S353	B-3
S354	A-3
S355	A-1
S356	A-2

FU-153 BOARD
(SIDE A)

CN001	C-2
CN002	B-2
CN003	A-2
FB001	C-2
FB002	B-2
FB003	B-2
LF001	C-1
Q003	B-2
Q005	A-2
R001	A-2
R005	B-2
R008	A-1
R019	B-2
R021	B-2

FU-153 BOARD
(SIDE B)

C001	B-1
CN004	B-2
D001	B-1
D002	B-2
D003	A-2
F001	A-2
F002	B-2
F003	B-2
F004	B-2
F005	A-2
Q001	C-1
Q002	C-2
Q004	B-1
R002	B-1
R004	C-2
R006	B-1
R020	C-2

SECTION 5
ADJUSTMENTS

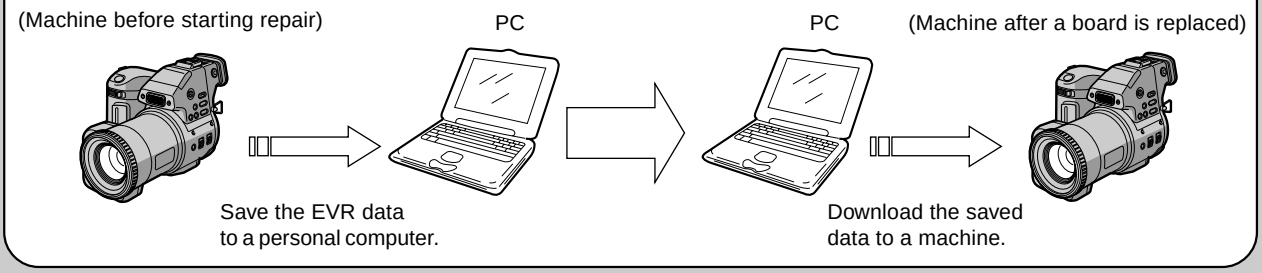
Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

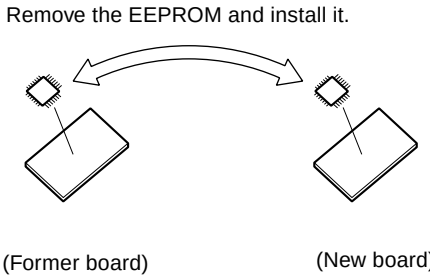
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



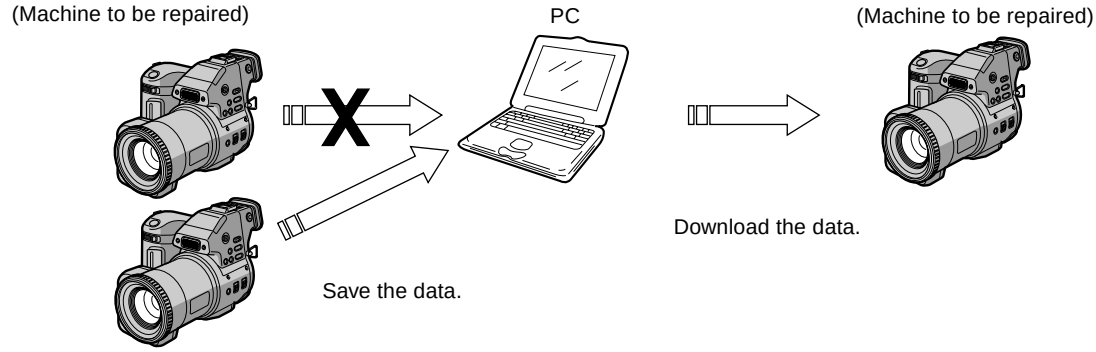
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 5-2 for the items to be checked.)

1-1. Adjusting items when replacing main parts and boards

When replacing main parts and boards, adjust the items indicated by ● in the following table.

Adjustment section	Adjustment	Replaced parts: Block replacement: Lens device	Flash unit	LCD block (LCD panel) LCD901	LCD EVF block (LCD panel) LCD902	LCD block (Back light unit) ND9001	Control switch block	FDD unit	Mounted parts replacement: CD-311 board (CCD imager) IC201	CD-311 board (YAW, PITCH sensor) SE150/151	VF-143 board (LCD drive) IC502	VF-143 board (LCD Timing generator) IC603	VF-143 board (Back light unit) ND601	VF-143 board (EVR) IC503	FC-85 board (S/H, AGC, A/D) IC102	FC-85 board (EVR) IC186	FC-85 board (CAMERA DSP) IC301	FC-85 board (VIDEO AMP) IC901	PK-55 board (LCD drive) IC901	PK-55 board (LCD Timing generator) IC904	PK-55 board (EVR) IC902	Board replacement: FC-85 board (COMPLETE)	VF-141 board (COMPLETE)	VP-55 board (COMPLETE)	PK-55 board (COMPLETE)	FC-85 board EEPROM IC508	FC-85 board EEPROM IC406
Initialization of 7, B, D, E, F, page data	Initialization of D page data																						●					●
	Initialization of 7, B, E, F page data																						●				●	
Video	Video sync level adj.															●	●	●					●				●	
	Video burst level adj.															●	●	●					●				●	
Camera	Hall adj.	●							●							●							●				●	
	Flange back adj.	●							●														●				●	
	F No. standard data input	●							●														●				●	
	Mechanical shutter adjustment	●							●														●				●	
	Light level adj.	●							●						●								●				●	
	Auto white balance standard data input	●							●						●								●				●	
	White balance ND filter compensation	●							●						●								●				●	
	Auto white balance adj.	●							●						●								●				●	
	Color reproduction adj.	●							●						●								●				●	
	Strobe white balance adj.		●						●						●	●							●				●	
	CCD (black and white) defect compensation								●														●				●	
	Steady shot adj.									●															●			
COLOR EVF	EVF initial data input																						●			●		●
	VCO adj. (NTSC)										●	●		●										●				
	VCO adj. (PAL)										●	●		●										●				
	Bright adj. (NTSC)										●			●										●				
	Bright adj. (PAL)										●			●										●				
	Contrast adj. (NTSC)										●			●										●				
	Contrast adj. (PAL)										●			●										●				
	Backlight consumption current adj.												●	●										●				
	White balance adj.				●						●		●	●										●				
LCD	LCD initial data input																						●			●		●
	VCO adj. (NTSC)																				●	●	●			●		●
	VCO adj. (PAL)																				●	●	●			●		●
	Black limit adj.																			●		●	●			●		●
	Bright adj.																			●		●	●			●		●
	Contrast adj.																			●		●	●			●		●
	Color adj.																			●		●	●			●		●
	VG center adj.																			●		●	●			●		●
	V-COM adj.			●																●		●	●			●		●
	White balance adj.			●		●														●		●	●			●		●
System control	Battery down adj.																						●			●		●
	Zoom center adj.						●																			●		●
	Eye sensor adj.										●	●	●															
	Alignment check (FDD unit)							●																		●		

Table 5-1-1

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT

1-1-1. List of service tools

- Oscilloscope
- Regulated power supply
- AC power adaptor (AC-L10A)
- Digital voltmeter
- Vectorscope
- Color monitor

Ref. No.	Name		Parts Code	Usage
J-1	Filter for color temperature correction (C14)		J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	Pattern box PTB-450		J-6082-200-A	
J-3	Color chart for pattern box		J-6020-250-A	
J-4	Siemens star		J-6080-875-A	For checking the flange back
J-5	Adjusting remote commander (RM-95 upgraded) (Note2)		J-6082-053-B	
J-6	Clear chart for pattern box		J-6080-621-A	White balance adjustment.
J-7	CPC-12 jig		J-6082-436-A	For connecting the adjustment remote commander For adjusting the LCD block
J-8	Alignment disk (Two disks as a pair)	TFD2-1(+)	8-967-990-01	Dynamic inspection disk with LCD adjustment signal
		TFD2-2(–)	8-967-990-11	
J-9	Personal computer			PC with Windows installed
J-10	Cleaning disk (OR-D29WA)		8-960-009-39	FDD head cleaning (Note 1)
	Cleaning disk		Available on market	
J-11	Mini pattern box		J-6082-353-B	For adjusting the flange back
J-12	Power supply cord (DC)		J-6082-223-A	For the battery down adjustment

Note 1: Usage and operating note
One or two seconds of momentary use of cleaning disk is sufficient such that FD is accessed momentarily by system control when the main power is turned on. After cleaning, insert a FD for playback. When cleaning is insufficient, use a cleaning disk again.
Caution: Avoid using a cleaning disk excessively. Head can be broken.

Note 2: If the microprocessor IC in the adjusting remote commander is not the new microprocessor (UPD7503G-C56-12), the pages cannot be switched.
In this case, replace with the new microprocessor (8-759-148-35).

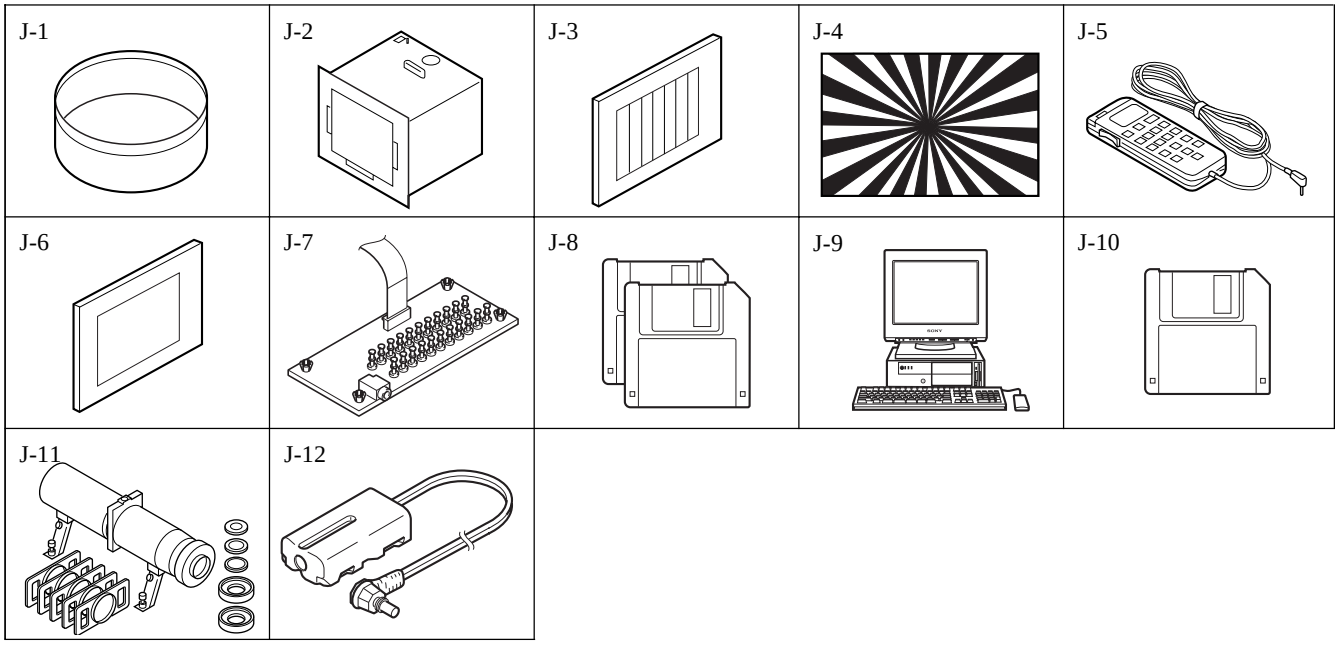


Fig. 5-1-1

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassemble.

1) Connect the equipment for adjustments according to Fig. 5-1-5.
2) Connect the Adjusting remote commander to FC-85 board CN803 via CPC-12 jig (J-6082-436-A). (See Fig. 5-1-3)

Note 3: Setting the "Forced CAMERA mode power ON" Mode
   1) Select page: 0, address: 01, and set data: 01.
   2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The Above procedure will enable the camera power to be turned on. After completing adjustments, be sure to exit the "Forced CAMERA mode power ON Mode".

Note 4: Exiting the "Forced CAMERA mode power ON Mode"
   1) Select page: 0, address: 01, and set data: 01.
   2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
   3) Select page: 0, address: 01, and set data: 00.

1-1-3. Discharging of the Flashlight Power Supply

The capacitor which is used as power supply of flashlight is charged with 200 V to 300 V voltage. Discharge this voltage before starting adjustments in order to protect service engineers from electric shock during adjustment.

Discharge procedure

1. Press the FLASH button (PK-55 board S705) and turn off the FLASH LED (PK-55 board D701).
2. Fabricate the discharging jig as shown in Fig. 5-1-5 locally by yourself. Connect the discharging jig to the positive (+) and negative (–) terminal of the flash voltage charge capacitor. Allow ten seconds to discharge the voltage.

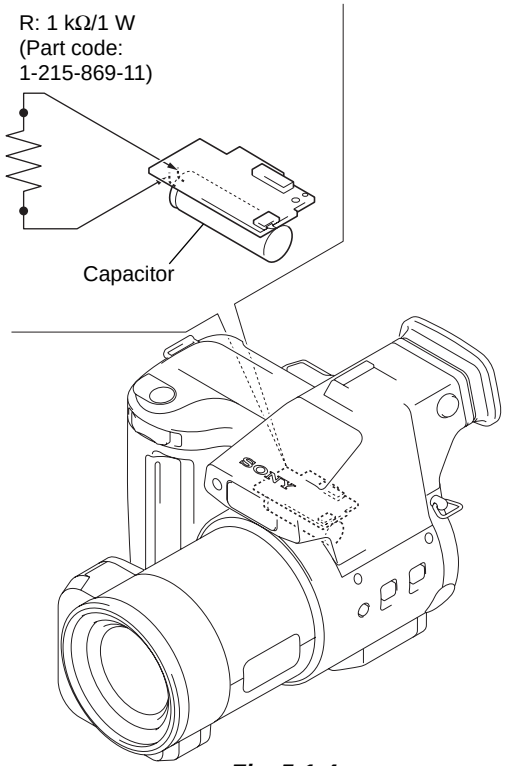


Fig. 5-1-4

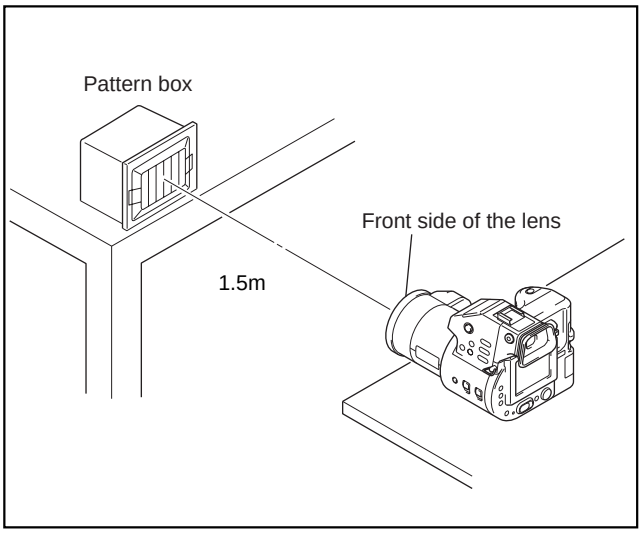


Fig. 5-1-2

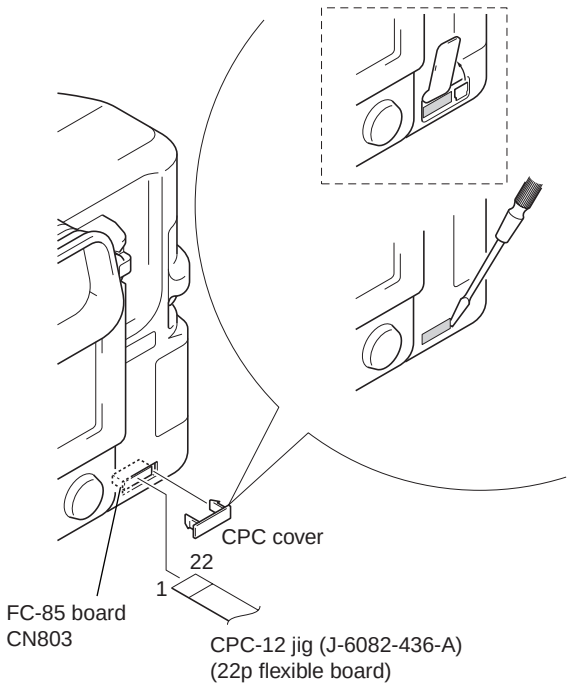


Fig. 5-1-3

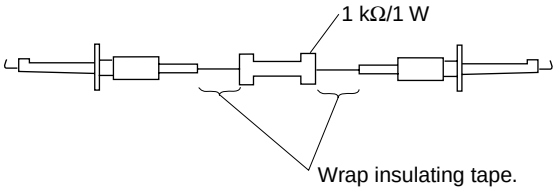
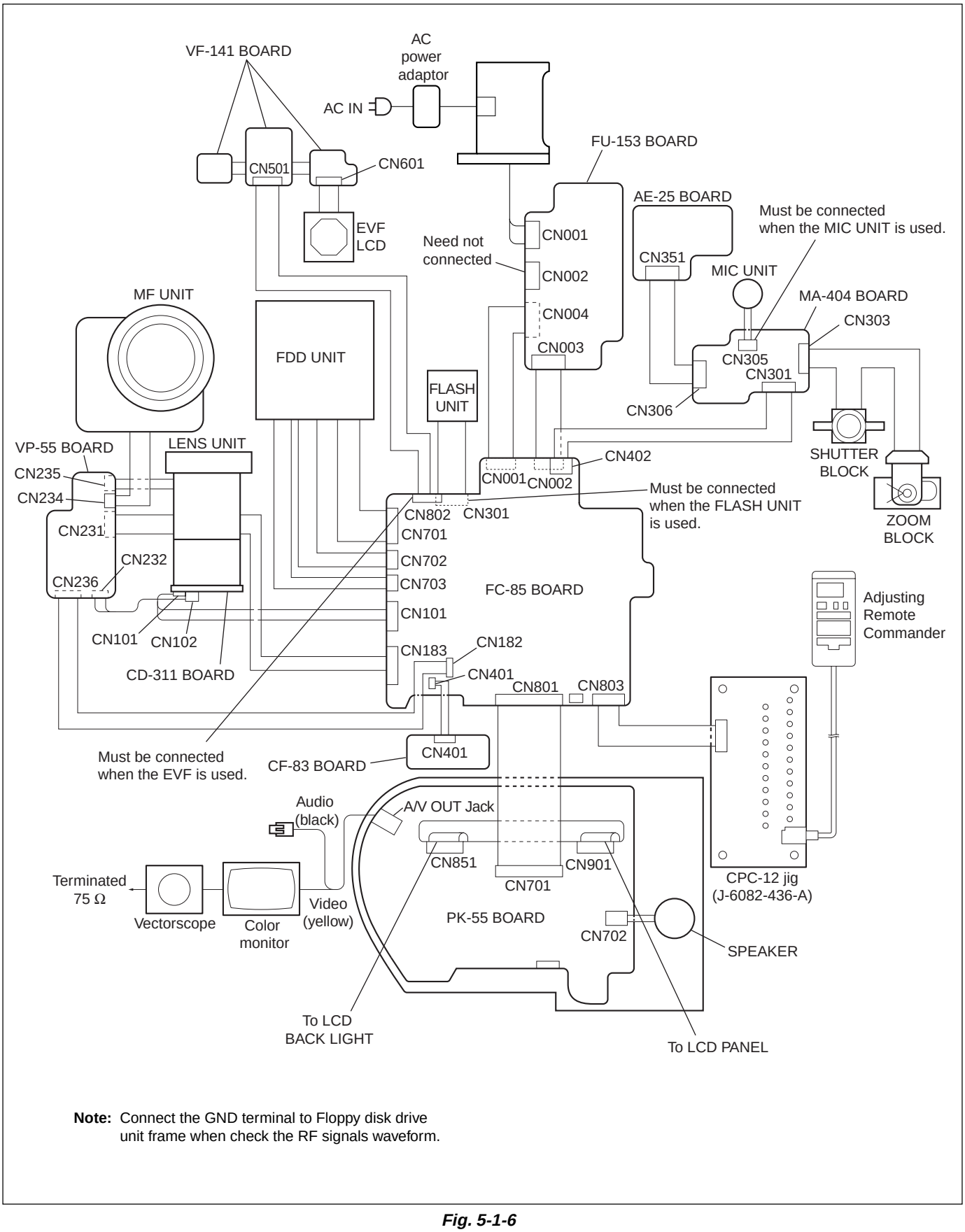


Fig. 5-1-5



Note: Connect the GND terminal to Floppy disk drive unit frame when check the RF signals waveform.

Fig. 5-1-6

1-1-4. Precautions

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments.

1. PLAY/CAMERA/MOVIE switch
   (PK-55 board S708, S710) ..... CAMERA
2. FOCUS AUTO/MANUAL switch
   (CF-83 board S402) ..... MANUAL
3. PROGRAM AE button (AE-25 board S354)
   ..... AUTO (No mark indicated on LCD)
4. DISPLAY button (PK-55 board S702) ..... OSD OFF
5. WHITE BALANCE button
   (AE-25 board S353) ..... AUTO
6. P.EFFECT (Menu display) ..... OFF
7. DEMO (Menu display) ..... OFF
8. VIDEO OUT (Menu display) ..... NTSC

2. Order of Adjustments

Basically carry out adjustments in the order given.

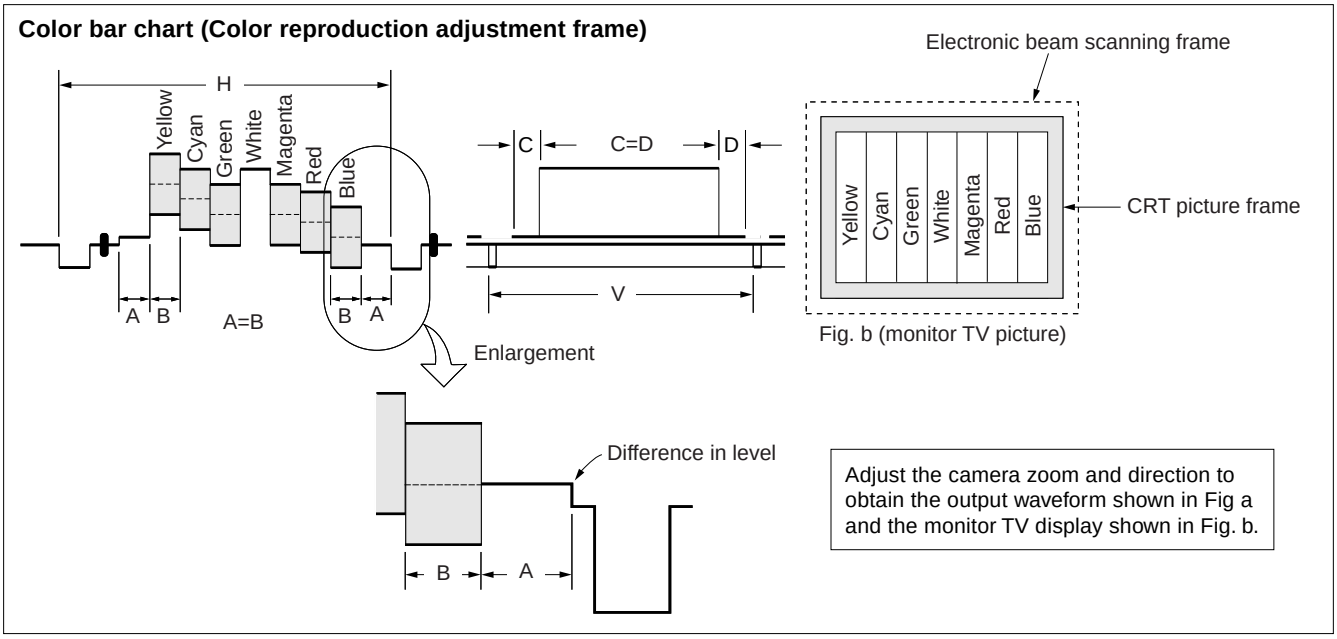


Fig. 5-1-7

3. Subjects

1) Color bar chart (Standard picture frame).
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 5-1-7. (Standard picture frame)
2) Clear chart (Standard picture frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time)
3) Chart for flange back adjustment
   Join together a piece of white A0 size paper (1189mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 5-1-8.

Note: Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

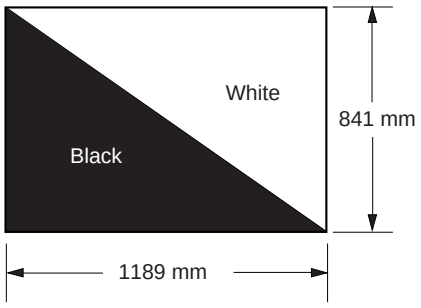


Fig. 5-1-8

4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate flash adjustment. If it is not available, prepare the flash adjustment box as given below;

1) Provide woody board A, B and C of 15 mm thickness.

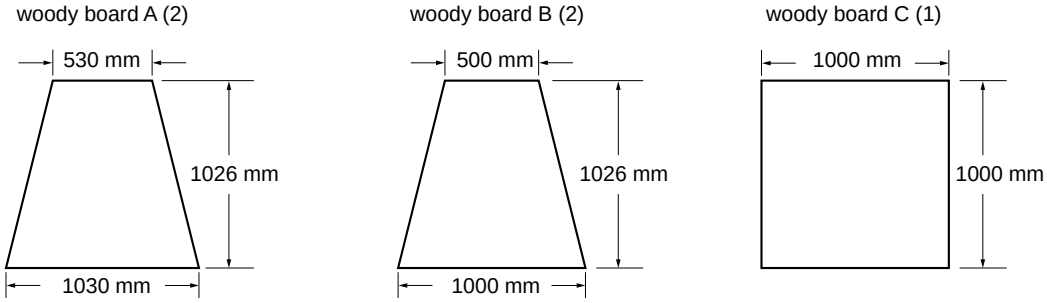


Fig. 5-1-9

2) Apply black mat paint to one side of woody board A and B.
3) Attach background paper (J-2501-130-A) to woody board C.
4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig 5-1-10)

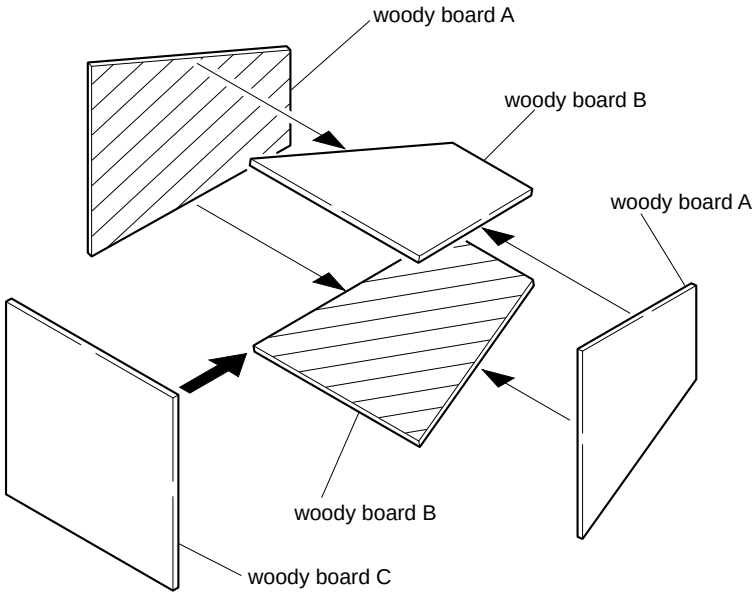


Fig. 5-1-10

1-2. INITIALIZATION OF B, D, E, F, 7 PAGE DATA

1-2-1. Initialization of D Page Data

1. Initializing D Page Data

Note: If the D page data has been initialized, the following adjustments need to be performed again.
1) Modification of D page data
2) LCD system adjustments
3) Battery end adjustments

Adjusting page	D
Adjusting Address	10 to EF

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	2	03	01	
3	2	00	2D	
4	2	01	2D	Press PAUSE button.
5	2	02		Check the data changes to "01".
6				Perform "Modification of D page Data".

2. Modification of D Page Data

If the D page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of D Page Data:

Order	Page	Address	Data	Procedure
1	2	00	29	
2	2	01	29	Press PAUSE button.

3. D Page Table

Note 1: Fixed data-1: Initialized data.
(Refer to "1. Initializing of D Page Data")
Note 2: Fixed data-2: Modified data.
(Refer to "2. Modification of D Page Data")

Address	Initial value	Remark
00 to 0F		
10	00	Test mode
11 to 88		Fixed data-1 (Initialized data)
89		Zoom center adj.
8A to 8F		Fixed data-1 (Initialized data)
90	80	Battery down adj.
91	88	
92	AD	
93	C2	
94	CD	
95 to C0		Fixed data-1 (Initialized data)
C1	A0	White balance adj. (EVF)
C2	78	
C3, C4		Fixed data-1 (Initialized data)
C5	88	VCO adj. (NTSC) (EVF)
C6	B0	Backlight Consumption Current adj. (EVF)
C7, C8		Fixed data-1 (Initialized data)
C9	A8	Bright adj. (NTSC) (EVF)
CA	88	Contrast adj. (NTSC) (EVF)
CB	A8	Bright adj. (PAL) (EVF)
CC	88	Contrast adj. (PAL) (EVF)
CD	80	VCO adj. (PAL) (EVF)
CE, CF		Fixed data-1 (Initialized data)
D0	A2 / B2	Bright adj. (LCD) (Note 3)
D1	70 / 74	Color adj. (LCD) (Note 3)
D2	A0 / A8	White balance adj. (LCD) (Note 3)
D3	7A	
D4	B8 / C0	Contrast adj. (LCD) (Note 3)
D5	B0 / 54	D range adj. (LCD) (Note 3)
D6	68 / 8A	V-COM level adj. (LCD) (Note 3)
D7	6F	VCO adj. (NTSC) (LCD)
D8	7A / 8A	V-COM adj. (LCD) (Note 3)
D9 to DC		Fixed data-1 (Initialized data)
DD	6F / 5F	VCO adj. (PAL) (LCD) (Note 3)
DF to EB		Fixed data-1 (Initialized data)
EC	22	Eye sensor adj.
ED to EF		Fixed data-1 (Initialized data)

Note 3: LCD TYPE S / LCD TYPE C

1-2-2. Initialization of B, E, F, 7 Page Data

1. Initializing B, E, F, 7 Page Data

Note: If the B, E, F Page data has been initialized, "Modification of B, E, F, 7 Page Data" and following adjustments need to be performed again.
1) Modification of B, E, F, 7 page data
2) Video system adjustments
3) Camera system adjustments

Adjusting page	F
Adjusting Address	10 to FF
Adjusting page	E
Adjusting Address	00 to FF
Adjusting page	B
Adjusting Address	00 to FF
Adjusting page	7
Adjusting Address	00 to FF

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	00	FF	
3	6	01	FF	Press PAUSE button.
4	6	02	01	Check the data changes to "01".
5	6	03	01	
6	6	00	2D	
7	6	01	2D	Press PAUSE button.
8	6	02		Check the data changes to "01".
9				Perform "Modification of B, E, F, 7 page Data".

2. Modification of B, E, F, 7 Page Data

If the B, E, F, 7 Page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of B, E, F, 7 Page data

Order	Page	Address	Data	Procedure
1	2	00	29	
2	2	01	29	Press PAUSE button.

3. B Page Table

Note 1: Fixed data-1: Initialized data.
(Refer to "1. Initializing B, E, F, 7 Page Data")
Note 2: Fixed data-2: Modified data.
(Refer to "2. Modification of B, E, F, 7 Page Data")

Address	Initial value	Remark
00	Fixed data-2	
01 to FF	Fixed data-1 (Initialized data)	

4. E Page Table

Note 1: Fixed data-1: Initialized data.
(Refer to "1. Initializing B, E, F, 7 Page Data")
Note 2: Fixed data-2: Modified data.
(Refer to "2. Modification of B, E, F, 7 Page Data")

Address	Initial value	Remark
00 to FF	Fixed data-1 (Initialized data)	

5. F Page Table

Note 1: Fixed data-1: Initialized data. (Refer to "1.Initializing of B, E, F, 7 Page Data")
Note 2: Fixed data-2: Modified data. (Refer to "2.Modification of B, E, F, 7 Page Data")

Address	Initial value	Remark
00 to 0F		Fixed data-1 (Initialized data)
10 to 13		Fixed data-2
14	12	Flange back adj.
15	A8	
16	38	
17	08	
18	17	
19	67	
1A	00	
1B	00	
1C	00	
1D	00	
1E	41	
1F	00	
20	20	
21	20	
22	20	
23	44	
24	0A	
25	00	
26	85	Light level adj.
27		Fixed data-2
28	94	Light level adj.
29	47	F No. standard data input
2A	41	
2B	3D	
2C	3D	
2D		Fixed data-1 (Initialized data)
2E	80	Hall adj.
2F	93	
30		Fixed data-2
31 to 33		Fixed data-1 (Initialized data)
34	15	Hall adj.
35	7C	
36 to 39		Fixed data-2
3A	2F	Auto white balance standard data input
3B	37	
3C	40	
3D	D0	
3E	Fixed data-2	
3F	B5	Auto white balance adj.
40	43	
41	03	Color reproduction adj.
42	E9	
43	63	
44	83	
45	D5	
46	FE	
47	73	
48	45	
49 to 4C		Fixed data-1 (Initialized data)
4D	27	Strobe white balance adj.
4E	77	

Address	Initial value	Remark
4F	00	White balance ND filter compensation
50	00	
51	03	Color reproduction adj. (ND filter ON)
52	E9	
53	63	
54	83	
55	D5	
56	FE	
57	73	
58	45	
59	00	Auto white balance standard data input
5A	14	Mechanical shutter adj.
5B		Fixed data-1 (Initialized data)
5C	63	Color reproduction adj.
5D	83	
5E	03	
5F	E9	
60	63	Color reproduction adj. (ND filter ON)
61	83	
62	03	
63	E9	
64	10	Strobe white balance adj.
65		Fixed data-1 (Initialized data)
66	61	Video burst level adj.
67, 68		Fixed data-1 (Initialized data)
69	00	Strobe white balance adj.
6A	E3	
6B	00	
6C	0B	Mechanical shutter adj.
6D	C2	
6E	09	
6F	42	
70	06	
71	C2	
72	05	
73	C2	
74	04	
75	C2	
76	33	
77	33	
78	33	
79	33	
7A	33	
7B	33	
7C	33	
7D	33	
7E	33	
7F	33	
80	00	Auto white balance adj.
81	56	Video sync level adj.
82 to 9F		Fixed data-1 (Initialized data)

Address	Initial value	Remark
A0	00	Mixed color cancel adj.
A1	00	
A2	00	
A3	00	
A4 to AB		Fixed data-1 (Initialized data)
AC	80	Steady shot adj. (2)
AD	80	Steady shot adj. (1)
AE to AF		Fixed data-1 (Initialized data)
B0 to FF		Fixed data-2

6. 7 Page Table

Note 1: Fixed data-1: Initialized data. (Refer to “1. Initializing B, E, F, 7 Page Data”)
Note 2: Fixed data-2: Modified data. (Refer to “2. Modification of B, E, F, 7 Page Data”)

Address	Initial value	Remark
00 to 5F	Fixed data-1 (Initialized data)	
60	0F	CCD black defect compensation
61	FF	
62	0F	
63	FF	
64	0F	
65	FF	
66	0F	
67	FF	
68	0F	
69	FF	
6A	0F	
6B	FF	
6C	0F	
6D	FF	
6E	0F	
6F	FF	
70	0F	
71	FF	
72	0F	
73	FF	
74	0F	
75	FF	
76	0F	
77	FF	
78	0F	
79	FF	
7A	0F	
7B	FF	
7C	0F	
7D	FF	
7E	0F	
7F	FF	
80	0F	
81	FF	
82	0F	
83	FF	
84	0F	
85	FF	
86	0F	
87	FF	
88	0F	CCD white defect compensation
89	FF	
8A	0F	
8B	FF	
8C	0F	
8D	FF	

Address	Initial value	Remark
8E	0F	CCD white defect compensation
8F	FF	
90	0F	
91	FF	
92	0F	
93	FF	
94	0F	
95	FF	
96	0F	
97	FF	
98	0F	
99	FF	
9A	0F	
9B	FF	
9C	0F	
9D	FF	
9E	0F	
9F	FF	
A0	0F	
A1	FF	
A2	0F	
A3	FF	
A4 to FF	Fixed data-1 (Initialized data)	

1-3. VIDEO SYSTEM ADJUSTMENTS

1. Video Sync Level Adjustment

Adjust the sync level of the composite video signal output.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	81
Specified Value	A = 286 ± 5 mVp-p (NTSC) A = 300 ± 6 mVp-p (PAL)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	04	
3	F	81		Change the data and set the sync level (A) to the specified value.
4				Press PAUSE button

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	

2. Video Burst Level Adjustment

Adjust the burst level of the composite video signal output.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	66
Specified Value	A = 286 ± 10 mVp-p (NTSC) A = 300 ± 12 mVp-p (PAL)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	04	
3	F	66		Change the data and set the burst level (A) to the specified value.
4				Press PAUSE button

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	

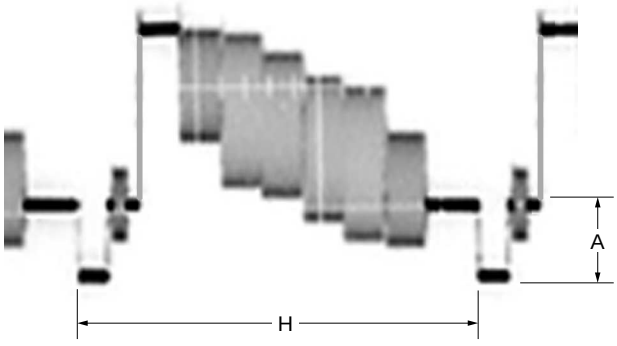


Fig. 5-1-11

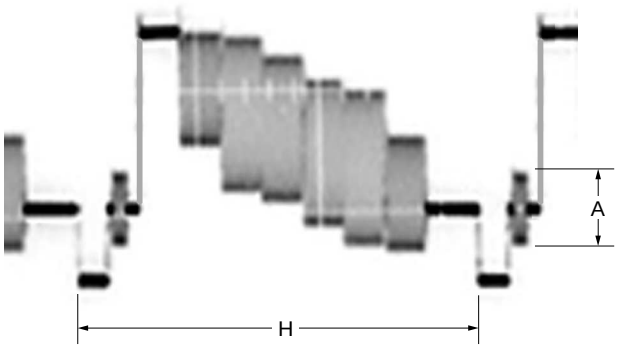


Fig. 5-1-12

1-4. CAMERA SYSTEM ADJUSTMENT

Before perform the camera system adjustments, check that the specified values of “VIDEO SYSTEM ADJUSTMENTS” are satisfied.

Data setting during camera system adjustment

Perform the following data setting before the camera system adjustments.

Data setting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	E	43	10	Press PAUSE button.
3	E	8F	00	Press PAUSE button.
4	B	67	00	Press PAUSE button.

After completing the camera system adjustments, release the data setting:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	E	43	08	Press PAUSE button.
3	E	8F	11	Press PAUSE button.
4	B	67	85	Press PAUSE button.
5	0	01	00	

1. HALL Adjustment

For detecting the position of lens iris, adjust the HALL AMP gain and offset.

Mode	CAMERA
Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 2)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	2E, 2F, 34, 35
Specified Value	13 to 17 during IRIS OPEN 7B to 7F during IRIS CLOSE

Note 1: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Note 2: The right 2 digits of the page: 1 displayed data of the adjusting remote commander.

1:00:XX
└ Displayed data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	6	94	15	
6	6	95	7D	
7	6	01	6D	Press PAUSE button. (Note 3)
8	6	02		Check the data changes to "01".
9	6	01	00	Press PAUSE button.

Note 3: The adjustment data will be automatically input to page: F, address: 2E, 2F, 34 and 35.

Checking method:

Order	Page	Address	Data	Procedure
1	0	03	03	
2	6	01	01	Press PAUSE button.
3	1			Check that the displayed data (Note 2) during IRIS OPEN satisfies the specified value.
4	6	01	03	Press PAUSE button.
5	1			Check that the displayed data (Note 2)during IRIS CLOSE satisfies the specified value.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	03	00	
2	6	01	00	Press PAUSE button.
3	6	95	00	
4	6	94	00	
5	5	F1	00	
6	D	63	00	Press PAUSE button.
7				Release the data setting performed at step 4. (Refer to page 5-14)
8	0	01	00	

2. Flange Back Adjustment (Using the minipattern box)

The flange back of inner focus lens is adjusted automatically. If shifted, the auto focus is disordered.

Mode	CAMERA
Subject	Siemens star chart with ND filter for minipattern box (Note 1)
Measurement Point	Check operation on the LCD screen
Measuring Instrument	
Adjustment Page	F
Adjustment Address	14 to 25

Note 1: Dark Siemens star chart.
Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Preparations before adjustments:

1) The minipattern box is installed as shown in the following figure.
   Note 3: The attachment lenses are not used.
   Note 4: Take care not to hit the mini-pattern box when extending the lens.
2) Install the minipattern box so that the distance between it and the front of lens of camera is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.
6) Check that the data on page: F, address: 14 to 25 are initial value (See table below).

Address	Data	Address	Data
14	12	1D	00
15	A8	1E	41
16	38	1F	00
17	08	20	20
18	17	21	20
19	67	22	20
1A	00	23	44
1B	00	24	0A
1C	00	25	00

Specified voltage: The specified voltage varies according to the minipatternbox, so adjustment the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

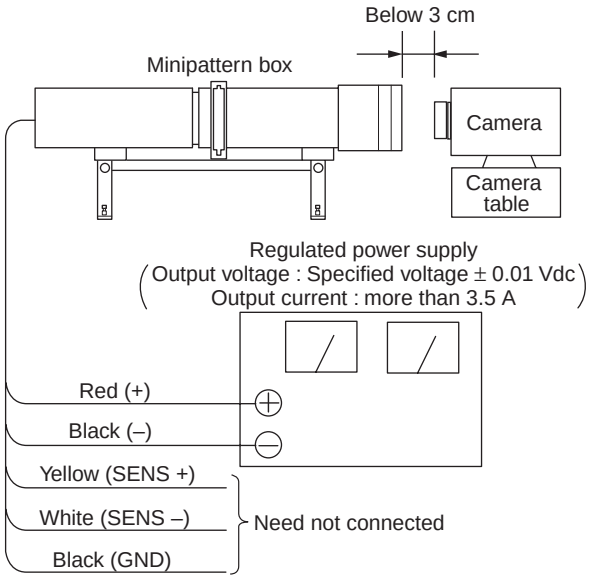


Fig. 5-1-13

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	6	01	13	Press PAUSE button.
6	6	01	27	Press PAUSE button. (Note 5)
7	6	02		Check the data changes to "01".

Note 5: The adjustment data will be automatically input to page: F, address: 14 to 25.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	5	F1	00	
3	D	63	00	Press PAUSE button.
4				Release the data setting performed at step 4. (Refer to page 5-14)
5	0	01	00	
6				Perform"Flange Back Check".

3. Flange Back Adjustment
(Using the flange back adjustment chart and a subject more than 500 m away)

The flange back of inner focus lens is adjusted automatically. If shifted, the auto focus is disordered.

3-1. Flange Back Adjustment (1)

Mode	CAMERA
Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Check operation on the LCD screen
Measuring Instrument	
Adjustment Page	F
Adjustment Address	14 to 25

Note 1: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Preparations before adjustments:

1) Place the Flange back adjustment chart 2.0 m from the front of the lens.
2) Check that the center of Flange back adjustment chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.
3) Check that the data on page: F, address: 14 to 25 are initial value (See table below).

Address	Data	Address	Data
14	12	1D	00
15	A8	1E	41
16	38	1F	00
17	08	20	20
18	17	21	20
19	67	22	20
1A	00	23	44
1B	00	24	0A
1C	00	25	00

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	6	01	13	Press PAUSE button.
6	6	01	15	Press PAUSE button. (Note 2)
7	6	02		Check the data changes to "01".

Note 2: The adjustment data will be automatically input to page: F, address: 14 to 25.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	5	F1	00	
3	D	63	00	Press PAUSE button.
4				Release the data setting performed at step 4. (Refer to page 5-14)
5	0	01	00	
6				Perform"Flange Back Adjustment (2)".

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing “Flange Back Adjustment (1)”.

Mode	CAMERA
Subject	Subject more than 500 m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on the LCD screen
Measuring Instrument	
Adjustment Page	F
Adjustment Address	14 to 25

Adjusting method:

Order	Page	Address	Data	Procedure
1				Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen)
2	0	01	01	
3	5	F1	FF	
4	D	63	40	Press PAUSE button.
5				Perform “Data setting during camera system adjustment”. (Refer to page 5-14)
6	6	01	13	Press PAUSE button.
7				Place the ND filter on the lens so that the optimum image is obtain.
8	6	01	29	Press PAUSE button. (Note 1)
9	6	02		Check the data changes to “01”.

Note 1: The adjustment data will be automatically input to page: F, address: 14 to 25.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	5	F1	00	
3	D	63	00	Press PAUSE button.
4				Release the data setting performed at step 5. (Refer to page 5-14)
5	0	01	00	
6				Perform“Flange Back Check”.

4. Flange Back Check

Mode	CAMERA
Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on the LCD screen
Measuring Instrument	
Specified value	Focused at the TELE end and WIDE end

Checking method:

Order	Page	Address	Data	Procedure
1				Place the Siemens star 2.0 m from the front of the lens. To open the IRIS , decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
2	0	01	01	
3	5	F1	FF	
4	D	63	40	Press PAUSE button.
5				Perform “Data setting during camera system adjustment”. (Refer to page 5-14)
6				Shoot the Siemens star with the zoom TELE end.
7				Check that the lens is focused.
8	6	2C	01	
9				While observe the LCD screen, change the zoom to the WIDE end and check that the lens is focused.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	2C	00	
2	5	F1	00	
3	D	63	00	Press PAUSE button.
4				Release the data setting performed at step 5. (Refer to page 5-14)
5	0	01	00	

5. F No. Standard Data Input

Compensate the unevenness of the iris meter sensitivity.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame with the zoom lens at WIDE end)
Adjustment Page	F
Adjustment Address	29 to 2C

Note 1: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Note 2: "F No. Standard Data Input" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Shoot the Clear chart with the zoom WIDE end.
2	0	01	01	
3	5	F1	FF	
4	D	63	40	Press PAUSE button.
5				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
6	E	51		Note down the data.
7	E	51	FF	Press PAUSE button.
8	6	01	BB	Press PAUSE button. (Note 3)
9	6	02		Check the data changes to "01".

Note 3: The adjustment data will be automatically input to page: F, address: 29 to 2C.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	E	51		Set data noted down at step 6, and press PAUSE button.
3	5	F1	00	
4	D	63	00	Press PAUSE button.
5				Release the data setting performed at step 5. (Refer to page 5-14)
6	0	01	00	

6. Mechanical Shutter Adjustment

Adjust the period which the mechanical shutter is closed, and compensate the exposure.

Mode	CAMERA
Subject	Clear chart (10 cm from the front of the lens)
Adjustment Page	F
Adjustment Address	5A, 6C to 7F

Note 1: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Shoot the Clear chart with the zoom WIDE end.
2	0	01	01	
3	5	F1	FF	
4	D	63	40	Press PAUSE button.
5				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
6	6	01	AD	Press PAUSE button (Note 2)
7	6	02		Check the data changes to "01".
8	6	AB		Check the data. 00 : Normal 01 to FF : Defective

Note 2: The adjustment data will be automatically input to page: F, address: 5A and 6C to 7F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	5	F1	00	
3	D	63	00	Press PAUSE button.
4				Release the data setting performed at step 5. (Refer to page 5-14)
5	0	01	00	

7. Picture Frame Setting

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, E=F

Note 1: Displayed data of the page 1 of adjusting remote commander.

1:XX:XX
- XX: XL or YL data
- XX: XH or YH data

Setting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform “Data setting during camera system adjustment”. (Refer to page 5-14)
5				Adjust the zoom and the camera direction, and set to the picture frame to the specified position.
6				Mark the position of the picture frame on the TV monitor, and adjust the picture frame to this position in following adjustment using “Color reproduction adjustment frame”.
7	0	03	18	
8	1			Note down the XH and XL data. (Note 1)
9	0	03	22	
10	1			Note down the YH and YL data. (Note 1)
11	0	03	00	
12	5	F1	00	
13	D	63	00	Press PAUSE button.
14				Release the data setting performed at step 4. (Refer to page 5-14)
15	0	01	00	

How to reset the zoom and focus when they deviated:

Order	Page	Address	Data	Procedure
1	6	90	XL	(Note 2)
2	6	91	XH	(Note 2)
3	6	92	YL	(Note 3)
4	6	93	YH	(Note 3)
5	6	01	79	Press PAUSE button.
6				Wait for 1 second.
7	6	2C	01	
8	6	01	00	Press PAUSE button.

Note 2: The data noted down at step 8 of “Setting method”.
Note 3: The data noted down at step 10 of “Setting method”.

Check on the oscilloscope

1. Horizontal period

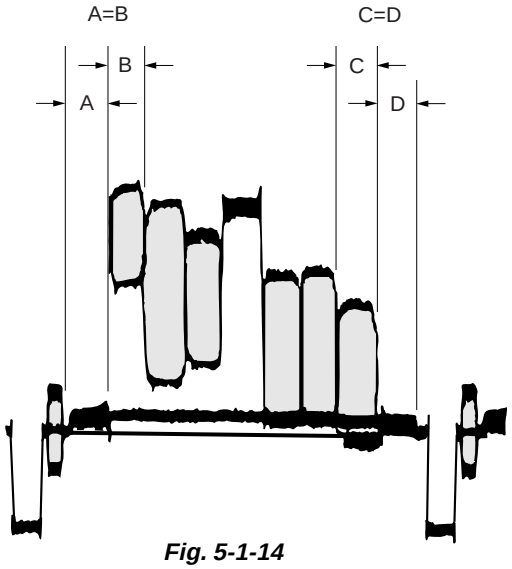


Fig. 5-1-14

2. Vertical period

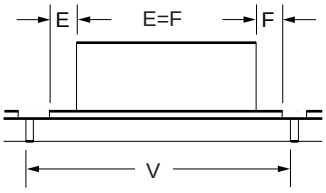


Fig. 5-1-15

Check on the TV monitor

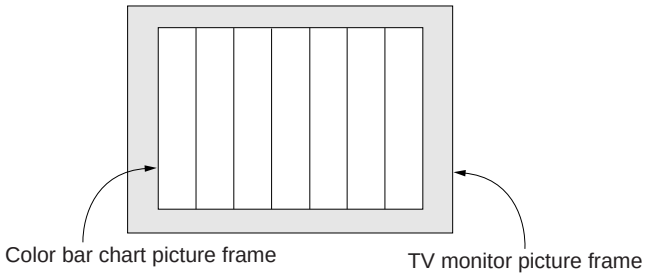


Fig. 5-1-16

8. Light Level Adjustment and ND Shutter Check

Adjust the standard LV value.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Displayed data of page: 1 (Note 2)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	26, 28
Specified Value	AE level 1: 0FE0 to 1020 AE level 2: Below 1000

Note 1: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Note 2: The right 4 digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└——Displayed data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	6	01	0D	Press PAUSE button. (Note 3)
6	6	02		Check the data changes to "01".
7	0	03	06	
8	1			Check that the displayed data (Note 2) satisfies the AE level 1 specified value.
9	E	41	6B	Press PAUSE button.
10	6	1C	03	
11	1			Check that the displayed data (Note 2) satisfies the AE level 2 specified value.
12	6	1C	00	
13	E	41	6A	Press PAUSE button.

Note 3: The adjustment data will be automatically input to page: F, address: 26 and 28.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	03	00	
2	6	01	00	Press PAUSE button.
3	5	F1	00	
4	D	63	00	Press PAUSE button.
5				Release the data setting performed at step 4. (Refer to page 5-14)
6	0	01	00	

9. Mixed Color Cancel Adjustment

To perform mixed color cancel adjustment based on data of each color in color bar.

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	A0 to A3

Note 1: Perform "Light Level Adjustment" before this adjustment.
Note 2: Perform "Auto White Balance Standard Data Input" after this adjustment.
Note 3: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	6	01	D7	Press PAUSE button.
6	6	01	D5	Press PAUSE button. (Note 4)
7	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: A0 to A3.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	5	F1	00	
3	D	63	00	Press PAUSE button.
4				Release the data setting performed at step 4. (Refer to page 5-14)
5	0	01	00	

10. Auto White Balance Standard Data Input

Adjust the white balance standard data at 3200K.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	3A to 3D, 59

Note 1: Perform "Light Level Adjustment" and "Mixed Color Cancel Adjustment" before this adjustment.
Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.
Note 3: "Auto White Balance Standard Data Input" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	6	01	11	Press PAUSE button.
6	6	01	0B	Press PAUSE button. (Note 4)
7	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 3A to 3D and 59.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	5	F1	00	
3	D	63	00	Press PAUSE button.
4				Release the data setting performed at step 4. (Refer to page 5-14)
5	0	01	00	
6				Perform "Auto White Balance Adjustment".

11. Auto White Balance ND Filter Compensation

Adjust to the proper auto white balance output data with Built-in ND filter.
If it is not correct, auto white balance and color reproducibility will be poor.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	4F, 50

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Note 3: "Auto White Balance ND Filter Compensation" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	F	27		Note down the data.
6	F	27	80	Press PAUSE button.
7	6	1C	03	Press PAUSE button.
8				Wait for 1 second.
9	6	01	11	Press PAUSE button.
10	6	01	09	Press PAUSE button. (Note 4)
11	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 4F and 50.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	1C	00	
3	F	27		Set the data noted down at step 5, and press PAUSE button.
4	5	F1	00	
5	D	63	00	Press PAUSE button.
6				Release the data setting performed at step 4. (Refer to page 5-14)
7	0	01	00	

12. Auto White Balance Adjustment

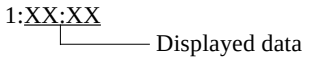
Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Displayed data of page: 1 (Note 3)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	3F, 40, 80
Specified Value	R ratio: 2760 to 28A0 B ratio: 5DE0 to 5F20

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00".
If not, turn the power of unit OFF/ON.

Note 3: The right 4 digits of the page: 1 displayed data of the adjusting remote commander.



Note 4: "Auto White Balance Adjustment" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	5	F1	FF	
4	D	63	40	Press PAUSE button.
5				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
6	6	01	A7	Press PAUSE button.
7	F	49 4A 4B 4C		Note down the data.
8	F	49 4A 4B 4C	28 00 5E 80	Press PAUSE button.
9	6	01	A5	Press PAUSE button. (Note 5)
10	6	02		Check the data changes to "01".
11	6	01	3F	Press PAUSE button.
12	0	03	04	
13	1			Check that the displayed data (Note 3) satisfied the R ratio specified value.
14	0	03	05	
15	1			Check that the displayed data (Note 3) satisfied the B ratio specified value.

Note 5: The adjustment data will be automatically input to page: F, address: 3F, 40 and 80.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	03	00	
2	6	01	00	Press PAUSE button.
3	F	49 4A 4B 4C		Set the data noted down at step 7, and press PAUSE button.
4	5	F1	00	
5	D	63	00	Press PAUSE button.
6				Release the data setting performed at step 5. (Refer to page 5-14)
7	0	01	00	

13. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

13-1. Color Reproduction Adjustment (Without ND Filter)

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	41 to 48, 5C to 5F

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Note 3: "Color Reproduction Adjustment" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	B	75		Note down the data.
6	B	75	00	Press PAUSE button.
7	6	01	AB	Press PAUSE button.
8	6	12	80	Press PAUSE button.
9				Wait for 1 second.
10	6	12	00	Press PAUSE button.
11				Wait for 2 seconds.
12	6	01	A9	Press PAUSE button. (Note 4)
13	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 41 to 48 and 5C to 5F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	B	75		Set the data noted down at step 5, and press PAUSE button.
3	5	F1	FF	
4	D	63	40	Press PAUSE button.
5				Release the data setting performed at step 4. (Refer to page 5-14)
6	0	01	00	
7				Perform "Color Reproduction Check".

13-2. Color Reproduction Adjustment (With ND Filter)

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	51 to 58, 60 to 63

Note 1: Perform "Auto White Balance Standard Data Input" and "Auto White Balance ND Filter Compensation" before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Note 3: "Color Reproduction Adjustment" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	F	27		Note down the data.
6	F	27	80	Press PAUSE button.
7	B	75		Note down the data.
8	B	75	00	Press PAUSE button.
9	6	1C	03	
10				Wait for 1 second.
11	6	01	C3	Press PAUSE button.
12	6	12	80	Press PAUSE button.
13				Wait for 1 seconds.
14	6	12	00	Press PAUSE button.
15				Wait for 2 seconds.
16	6	01	C1	Press PAUSE button. (Note 4)
17	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 51 to 58 and 60 to 63.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	1C	00	
3	B	75		Set the data noted down at step 7, and press PAUSE button.
4	F	27		Set the data noted down at step 5, and press PAUSE button.
5	5	F1	FF	
6	D	63	40	Press PAUSE button.
7				Release the data setting performed at step 4. (Refer to page 5-14)
8	0	01	00	
9				Perform “Color Reproduction Check”.

14. Color Reproduction Check

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	LCD screen or Vectorscope
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform “Data setting during camera system adjustment”. (Refer to page 5-14)
5	B	75		Note down the data.
6	B	75	00	Press PAUSE button.
7	6	10	01	
8	E	52		Note down the data.
9	E	52	0A	Press PAUSE button.
10	6	01	0F	Press PAUSE button.
11	6	12	80	Press PAUSE button.
12				Wait for 1 second.
13	6	12	00	Press PAUSE button.
14				Wait for 2 seconds.
15				Check the each color luminance point is each color reproduction frame. (ND OFF)
16	F	27		Note down the data.
17	F	27	80	Press PAUSE button.
18	6	1C	03	
19				Wait for 1 second.
20	6	12	80	Press PAUSE button.
21				Wait for 1 second.
22	6	12	00	Press PAUSE button.
23				Wait for 2 seconds.
24				Check the each color luminance point is each color reproduction frame.(ND ON)
25	F	27		Set the data noted down at step 16, and press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	1C	00	
3	6	10	00	
4	E	52		Set the data noted down at step 8, and press PAUSE button.
5	B	75		Set the data noted down at step 5, and press PAUSE button.
6	5	F1	FF	
7	D	63	00	Press PAUSE button.
8				Release the data setting performed at step 4. (Refer to page 5-14)
9	0	01	00	

For NTSC mode

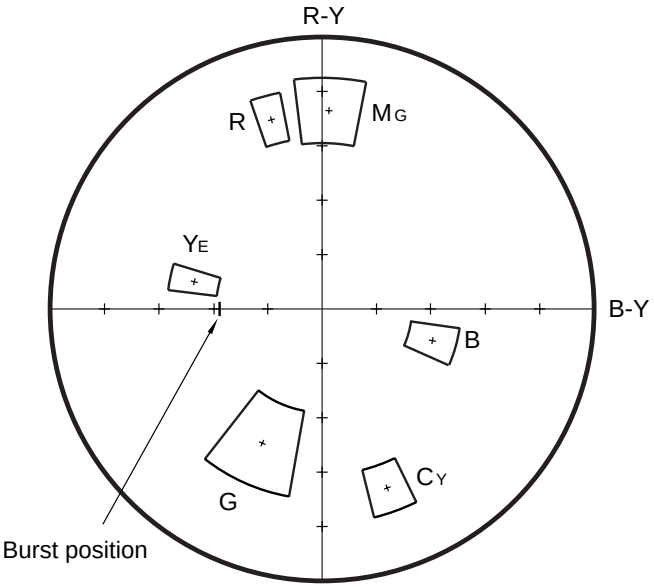


Fig. 5-1-17

For PAL mode

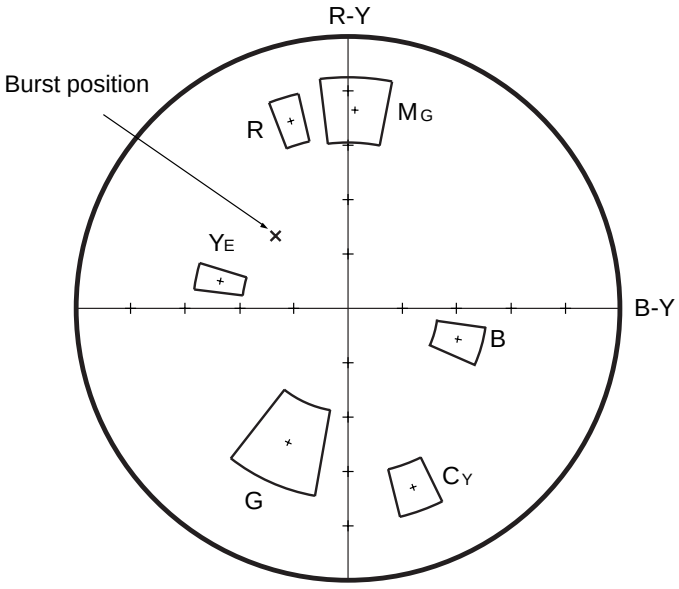


Fig. 5-1-18

15. Auto White Balance Check

Mode	CAMERA	
Subject	Clear chart (Color reproduction adjustment frame)	
Measurement Point	Displayed data of of Page: 1 (Note 2)	Video terminal A/V OUT jack (75 Ω terminated)
Measuring Instrument	Adjustment remote commander	Vectorscope
Specified Value	R ratio: 3E00 to 4200 B ratio: 3E00 to 4200	Fig. 5-1-19 (A) and (B)

Note 1: Refer to "Picture Frame Setting" for XH, XL, YH and YL.

Note 2: The right 4 digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the lens is not covered with either filter.
2	0	01	01	
3	5	F1	FF	
4	D	63	40	Press PAUSE button.
5				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
6	6	90	XL	(Note 1)
7	6	91	XH	(Note 1)
8	6	92	YL	(Note 1)
9	6	93	YH	(Note 1)
10	6	6C	01	
11	6	01	79	Press PAUSE button.
12				Wait for 1 second.
13	6	2C	01	
INDOOR data check (without ND filter)				
14	E	52		Note down the data.
15	E	52	0E	Press PAUSE button.
16	6	01	0F	Press PAUSE button.
17	0	03	04	
18	1			Check that the displayed data (Note 2)satisfied the R ratio specified value.
19	0	03	05	
20	1			Check that the displayed data (Note 2) satisfied the B ratio specified value.
21	F	27		Note down the data.
22	F	27	80	Press PAUSE button.
23	6	1C	03	
24				Wait for 1 second.
25	0	03	04	
26	1			Check that the displayed data (Note 2) satisfied the R ratio specified value.
27	0	03	05	
28	1			Check that the displayed data (Note 2) satisfied the B ratio specified value.
29	F	27		Set the data noted down at step 21, and press PAUSE button.
INDOOR luminance point check				
30	6	1C	00	
31	0	03	00	
32				Check that the center of the white luminance point within the circle shown Fig. 5-1-19 (A).
OUTDOOR luminance check				
33				Place the C14 filter on the lens.
34	E	4B		Note down the data.
35	E	4B	20	Press PAUSE button.
36	6	01	3F	Press PAUSE button.
37				Check that the center of the white luminance point settles in the circle shown Fig. 5-1-19 (B).

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	2C	00	
3	6	6C	00	
4	E	4B		Set the data noted down at step 34, and press PAUSE button.
5	E	52		Set the data noted down at step 14, and press PAUSE button.
6	5	F1	FF	
7	D	63	00	Press PAUSE button.
8				Release the data setting performed at step 5. (Refer to page 5-14)
9	0	01	00	

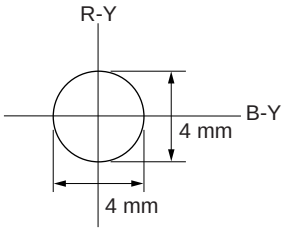


Fig. 5-1-19 (A)

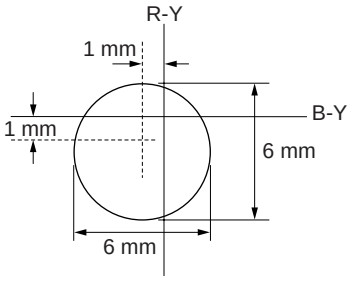


Fig. 5-1-19 (B)

16. Strobe White Balance Adjustment

Adjust the white balance when the strobe light flashed.

Mode	CAMERA
Subject	Flash adjustment box (Note 3) (1.0 m from the front of lens)
Adjustment Page	F
Adjustment Address	4D, 4E, 64, 69, 6A, 6B

Note 1: Perform "Hall Adjustment", "Flange Back Adjustment", "Light Level Adjustment" and "Auto White Balance Adjustment" before this adjustment.

Note 2: Perform this adjustment in the flash adjustment box.

Note 3: Refer to "4. Preparing the Flash Adjustment Box". (See page 5-7)

Note 4: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Note 5: "Strobe White Balance Adjustment" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Switch setting:

1) FLASH ..... ON

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform "Data setting during camera system adjustment". (Refer to page 5-14)
5	6	90	00	
6	6	91	00	
7	6	92	00	
8	6	93	C0	
9	6	6C	01	
10	6	2C	01	
11	6	01	79	Press PAUSE button.
12	6	01	67	Press PAUSE button.
13	6	02		Check the data changes to "01".
14	6	01	00	Press PAUSE button.
15	6	01	79	Press PAUSE button.
16	6	01	67	Press PAUSE button.
17	6	02		Check the data changes to "01".
18	6	01	00	Press PAUSE button.
19	6	01	79	Press PAUSE button.
20	6	01	B9	Press PAUSE button. (Note 6)
21	6	02		Check the data changes to "01".
22				Perform "Strobe Light Level and White Balance Check"

Note 6: The adjustment data will be automatically input to page: F, address: 4D, 4E, 64, 69, 6A and 6B.

17. Strobe Light Level and White Balance Check

Check the light level regulation and the white balance when the strobe light flashed.

Mode	CAMERA
Subject	Flash adjustment box (Note 3) (1.0 m from the front of lens)
Measurement Point	Displayed data of page: 1
Measuring Instrument	Adjusting remote commander
Specified value	Y level data: 60 to 94 R-Y level data: FA to FF or 00 to 06 (Note 4) B-Y level data: FA to FF or 00 to 06 (Note 4)

Note 1: Perform "Hall Adjustment", "Flange Back Adjustment", "Light Level Adjustment" and "Auto White Balance Adjustment" before this checking.
Perform this checking successively after performing "Strobe White Balance Adjustment". (Do not turn the power of the unit OFF)

Note 2: Perform this adjustment in the flash adjustment box.

Note 3: Refer to "4. Preparing the Flash Adjustment Box". (See page 5-7)

Note 4: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
- XX: B-Y level data
- XX: R-Y level data

Note 5: Displayed data of page: F, address: 64 of the adjusting remote commander.

F:XX:64
- XX: Y level data

Note 6: Check that the data of page: 6, address: 02 is "00".

Checking method:

Order	Page	Address	Data	Procedure
1	6	01	79	Press PAUSE button.
2	6	01	67	Press PAUSE button.
3				Check the flashing of strobe light.
4	6	02		Check the data changes to "01".
5	F	64		Check that the data satisfies the Y level data satisfied value. (Note 5)
6	0	03	02	
7	1			Check the R-Y and B-Y level data (Note 4) satisfies the specified value.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	03	00	
2	6	01	00	Press PAUSE button.
3	6	2C	00	
4	6	6C	00	
5	6	93	00	
6	5	F1	00	
7	D	63	00	Press PAUSE button.
8				Release the data setting performed at step 4 of "Strobe White Balance Adjustment". (Refer to page 5-14)
9	0	01	00	

18. CCD Black Defect Compensation

Mode	CAMERA
Subject	Clear chart (25 cm from the front of lens)
Measurement Point	Displayed data of page: 6, address: 55
Measuring Instrument	Adjusting remote commander
Adjustment Page	7
Adjustment Address	60 to 87

Note 1: Check that there are no dust, no dirt and reflection of the clear chart.

Note 2: Any subject other than the clear chart should be in the screen.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform “Data setting during camera system adjustment”. (Refer to page 5-14)
5	F	DF		Note down the data.
6	F	DF	4C	Press PAUSE button.
7	6	2C	01	
8	6	90	00	
9	6	91	03	
10	6	92	00	
11	6	93	00	
12	6	6C	01	
13	6	01	79	Press PAUSE button.
14	6	30	01	
15				Wait for 4 seconds.
16	6	01	8D	Press PAUSE button. (Note 3)
17	6	02		Check the data changes to “01”.
18	6	55		Check the data. 00 to 0A : Normal 0B to FF : Defective
19	6	01	00	Press PAUSE button.
20	F	DF	5A	Press PAUSE button.
21	6	01	89	Press PAUSE button.
22	6	02		Check the data changes to “01”.
23	6	55		Check the data. 00: Normal 01 to FF: Defective

Note 3: The adjustment data will be automatically input to page: 7, address: 60 to 87.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	F	DF		Set data noted down at step 5, and press PAUSE button.
2	6	01	00	Press PAUSE button.
3	6	2C	00	
4	6	30	00	
5	6	6C	00	
6	6	91	00	
7	5	F1	00	
8	D	63	00	Press PAUSE button.
9				Release the data setting performed at step 4. (Refer to page 5-14)
10	0	01	00	

19. CCD White Defect Compensation

Mode	CAMERA
Subject	Clear chart (25 cm from the front of lens)
Measurement Point	Displayed data of page: 6, address: 55
Measuring Instrument	Adjusting remote commander
Adjustment Page	7
Adjustment Address	88 to A3

Note 1: Check that there are no dust, no dirt and reflection of the clear chart.

Note 2: Any subject other than the clear chart should be in the screen.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	FF	
3	D	63	40	Press PAUSE button.
4				Perform “Data setting during camera system adjustment”. (Refer to page 5-14)
5	F	DE		Note down the data.
6	F	DE	1E	Press PAUSE button.
7	F	E3		Note down the data.
8	F	E3	18	Press PAUSE button.
9	6	01	8B	Press PAUSE button. (Note 3)
10	6	02		Check the data changes to “01”.
11	6	55		Check the data. 00 to 7F: Normal 80 to FF: Defective
12	6	01	00	Press PAUSE button.
13	F	DE	0F	Press PAUSE button.
14	F	E3	A0	Press PAUSE button.
15	6	01	87	Press PAUSE button.
16	6	02		Check the data changes to “01”.
17	6	55		Check the data. 00: Normal 01 to FF: Defective

Note 3: The adjustment data will be automatically input to page: 7, address: 88 to A3.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	F	DE		Set data noted down at step 5, and press PAUSE button.
2	F	E3		Set data noted down at step 7, and press PAUSE button.
3	6	01	00	Press PAUSE button.
4	5	F1	00	
5	D	63	00	Press PAUSE button.
6				Release the data setting performed at step 4. (Refer to page 5-14)
7	0	01	00	

20. Steady shot adjustment

- Perform the steady shot adjustment only when replacing the angular velocity sensor. When the microprocessor, circuit, etc. malfunctions, do not perform this adjustment but check operations only.
- Record the sensitivity label of the angular velocity sensor (repair part), including to which side of the board it was attached to, etc. If it has been attached incorrectly, the image will move up and down or to the left and right during steady shot operation. Be sure to take note of this.

Precautions on the Parts Replacement

There are two types of repair parts.

Type A ENC03JA
Type B ENC03JB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, readjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Switch setting:

1) Steady shot (FRONT SW block) ..... ON

20-1. Steady Shot Adjustment (1)

Mode	CAMERA
Subject	Pattern A (1.5 m from the front of protection glass)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope (H period)
Adjustment Page	F
Adjustment Address	AD

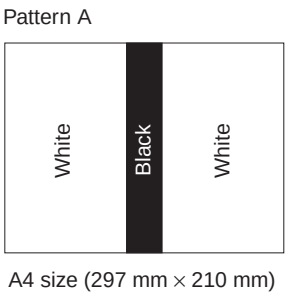


Fig. 5-1-20

Adjusting method:

Order	Page	Address	Data	Procedure
1				Expose pattern A with the zoom TELE end.
2				Adjust the inclination of the camera so that the vertical black line comes to the center of the screen.
3	0	01	01	
4	B	FF	08	Press PAUSE button.
5				Turn off the HOLD switch.
6				Adjust to the falling edge of the waveform with vertical scale on the oscilloscope. (Oscilloscope is H period.)
7				Turn on the HOLD switch.
8	B	FF	09	Press PAUSE button. At this time, measure the moving amount t1 (μ sec) of the falling edge of the waveform.
9				Turn off the HOLD switch.
10				Obtain D_{AD}'using the following equation (decimal calculation) $D_{AD}' = (4.0 / t1) \times \{1.01 / (\text{Yaw sensor sensitivity})\} \times 94$ (Note 1)
11				Raise D_{AD}' to a whole number, convert it to a hexadecimal digit and take this as D_{AD}. (Note 2)
12				Turn on the HOLD switch.
13	F	AD	D_{AD}	Press PAUSE button.
14	B	FF	08	Press PAUSE button.

Note 1: The Yaw sensor sensitivity (SE151 of CD-311 board) is labeled only on the repair parts.

Note 2: Refer to table 5-2-2. "Hexadecimal- decimal conversion table".

Processing after Completing Adjustment

Order	Page	Address	Data	Procedure
1	0	01	00	
2				Turn off the HOLD switch.
3				Check that the steady shot operation is performed normally.

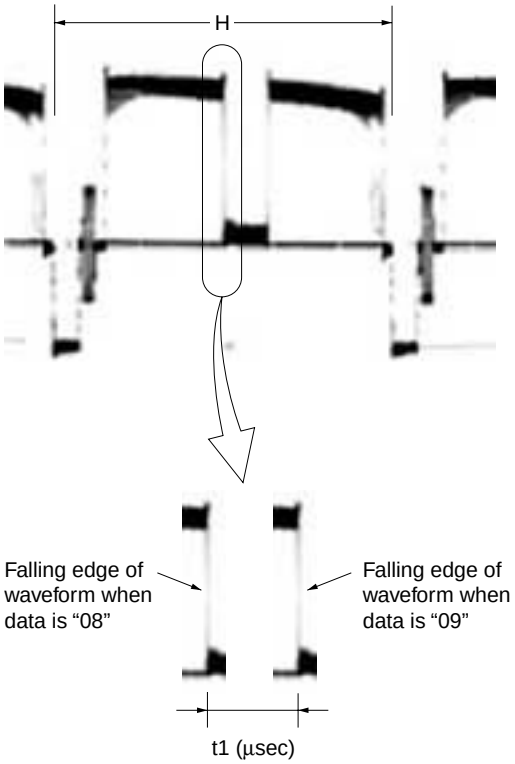

H
Falling edge of waveform when data is “08”
Falling edge of waveform when data is “09”
t1 (µsec)

Fig. 5-1-21

20-2. Steady Shot Adjustment (2)

Mode	CAMERA
Subject	Pattern B (1.5 m from the front of the protection glass)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope (V period)
Adjustment Page	F
Adjustment Address	AC

Pattern B

A4 size (297 mm × 210 mm)

Fig. 5-1-22

Adjusting method:

Order	Page	Address	Data	Procedure
1				Expose pattern B with the zoom TELE end.
2				Adjust the inclination of the camera so that the horizontal black line comes to the center of the screen.
3	0	01	01	
4	B	FE	08	Press PAUSE button.
5				Turn off the HOLD switch.
6				Adjust to the falling edge of the waveform with vertical scale on the oscilloscope. (Oscilloscope is V period.)
7				Turn on the HOLD switch.
8	B	FE	09	Press PAUSE button. At this time, measure the moving amount t2 (msec) of the falling edge of the waveform.
9				Turn off the HOLD switch.
10				Obtain D_{AC}'using the following equation (decimal calculation) D_{AC}'= (2.5 / t2) ×{1.00 / (Pitch sensor sensitivity) } ×104 (Note 1)
11				Raise D_{AC}' to a whole number, convert it to a hexadecimal digit and take this as D_{AC}. (Note 2)
12				Turn on the HOLD switch.
13	F	AC	D_{AC}	Press PAUSE button.
14	B	FE	08	Press PAUSE button.

Note 1: The Pitch sensor sensitivity (SE150 of CD-311 board) is labeled only on the repair parts.

Note 2: Refer to table 5-2-2. "Hexadecimal- decimal conversion table".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	00	
2				Turn off the HOLD switch.
3				Check that the steady shot operation is performed normally.

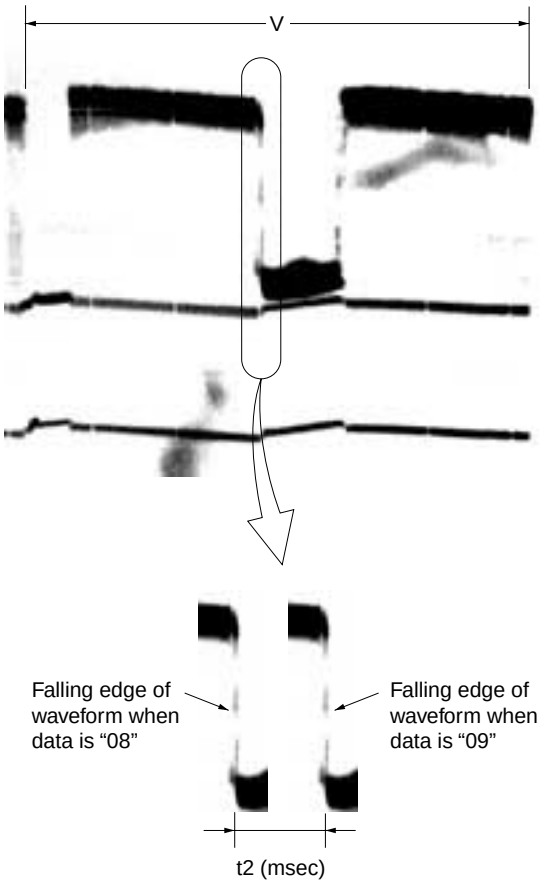


Fig. 5-1-23

1-5. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the LCD system are concentrated in CN803 of the FC-85 board.
Connect the Measuring Instruments via the CPC-12 jig (J-6082-436-A).
The following table shows the Pin No. and signal name of CN803.

Pin No.	Signal Name	Pin No.	Signal Name
1	FDDRF_B	12	LANC_OUT
2	FDDRF_A	13	MAKER_RECOG
3	INDEX	14	PF7
4	REG_GND	15	TXD
5	N. C.	16	RXD
6	TRACK_00	17	RESET
7	HSY	18	HI_VDD
8	COM	19	EVF_BL+ (N.C.)
9	VG	20	EVF_BL_4.75 (N.C.)
10	HI_UNREG	21	EVF_VG (N.C.)
11	LANC_IN	22	EVF_VCO (N.C.)

1. EVF Initial Data Input

Mode	CAMERA
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	1C , C0 to CD

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, and enter the data given in the following table.

Note: Press the PAUSE button each time the data are set, as the data are written to non-volatile memory (EEPROM).

Address	Data	Remark
1C	05	Fixed value
C0	67	
C1	A0	White Balance Adjustment
C2	78	
C3	48	Fixed value
C4	57	
C5	88	VCO Adjustment (NTSC)
C6	B0	Fixed value
C7	A8	
C8	00	
C9	A8	Bright Adjustment (NTSC)
CA	88	Contrast Adjustment (NTSC)
CB	A8	Bright Adjustment (PAL)
CC	88	Contrast Adjustment (PAL)
CD	80	VCO Adjustment (PAL)

Processing after Completing Adjustments:

1) Select page: 0, address: 01, and set data: 00.

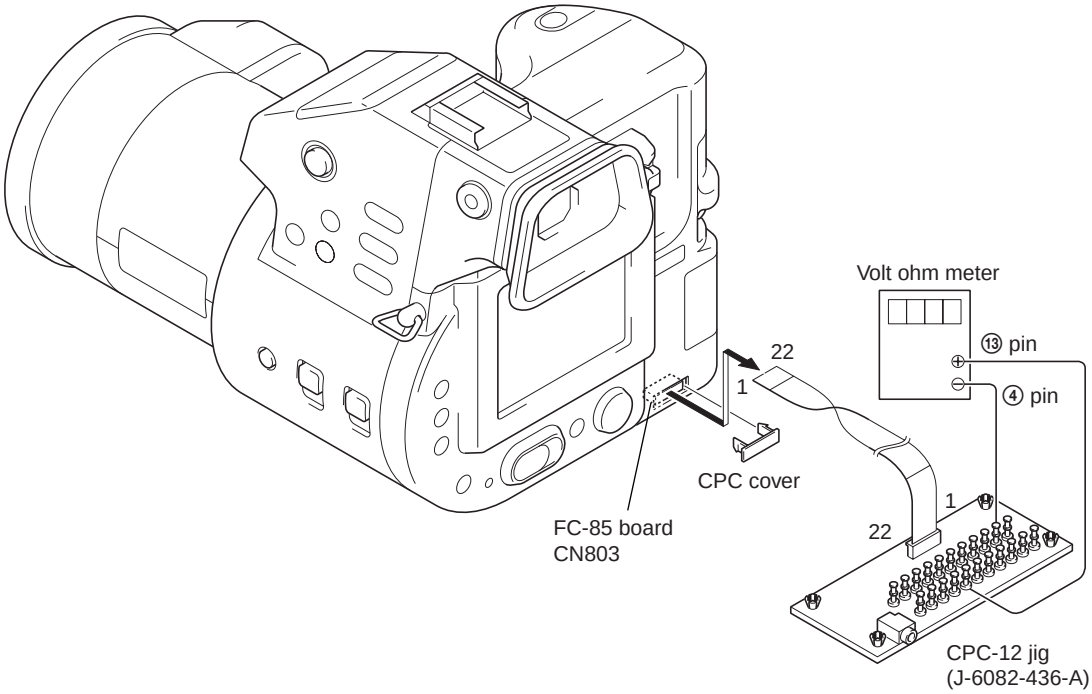


Fig. 5-1-24

2. VCO Adjustment (VF-141 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ㉒ of CN803 (EVF_VCO) on FC-85 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	C5 (NTSC) CD (PAL)
Specified Value	A = 1.70 ± 0.06 V (NTSC) A = 1.25 ± 0.06 V (PAL)

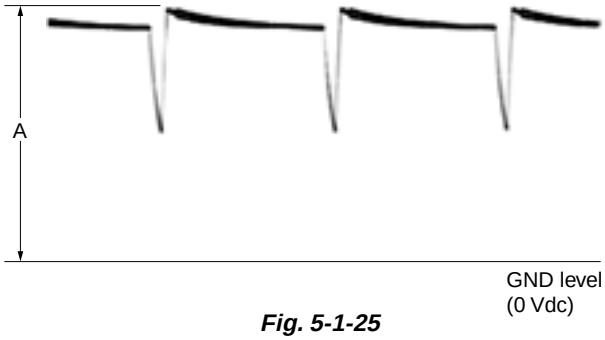


Fig. 5-1-25

Menu setting:

1) VIDEO OUT of SET UP menu
   ..... NTSC (NTSC mode)
   (This adjustment must be performed in NTSC mode, so don't set the menu setting to "PAL")

Adjusting method (NTSC):

Order	Page	Address	Data	Procedure
1	0	01	01	
2	2	11	80	
3	D	C5		Change the data and set the voltage (A) to the specified value.
4	D	C5		Press PAUSE button.

Adjusting method (PAL):

Order	Page	Address	Data	Procedure
1	0	01	01	
2	2	11	80	
3	D	C5		Change the data and set the voltage (A)to the specified value.
4	D	C5		Read the data and this data is named D_{C5}.
5	D	CD	D_{C5}	Press PAUSE button.

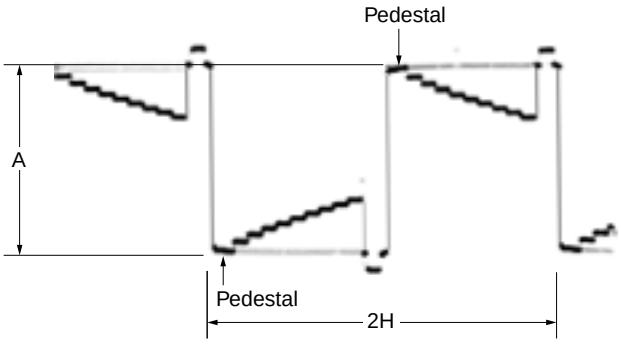
Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	2	11	00	
2	0	01	00	

3. Bright Adjustment (VF-141 board)

Set the D range of the RGB driver used to drive the LCD to the specified value. If deviated, the EVF screen will become blackish or saturated (whitish).

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ㉑ of CN803 (EVF_VG) on FC-85 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	C9 (NTSC) CB (PAL)
Specified Value	A = 7.20 ± 0.1 Vp-p



A: Between the reversed waveform pedestal and non-reversed waveform pedestal

Fig. 5-1-26

Menu setting:

1) VIDEO OUT of SET UP menu
   ..... NTSC (NTSC mode)
   (This adjustment must be performed in NTSC mode, so don't set the menu setting to "PAL")

Adjusting method (NTSC):

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	03	
3	D	C9		Change the data and set the voltage (A) to the specified value.
4	D	C9		Press PAUSE button.

Adjusting method (PAL):

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	03	
3	D	C9		Change the data and set the voltage (A) to the specified value.
4	D	C9		Read the data and this data is named D_{C9}.
5	D	CB	D_{C9}	Press PAUSE button.

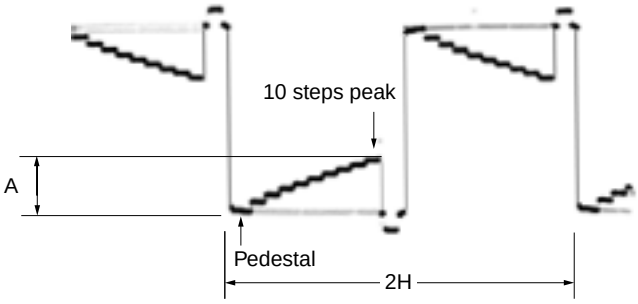
Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	

4. Contrast Adjustment (VF-141 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ㉑ of CN803 (EVF_VG) on FC-85 board
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	CA (NTSC) CC (PAL)
Specified Value	A = 2.12 ± 0.1 Vp-p



A: Between the pedestal and 10 steps peak

Fig. 5-1-27

Menu setting:

1) VIDEO OUT of SET UP menu
   ..... NTSC (NTSC mode)
   (This adjustment must be performed in NTSC mode, so don't set the menu setting to "PAL")

Adjusting method (NTSC):

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	03	
3	D	CA		Change the data and set the voltage (A) to the specified value.
4	D	CA		Press PAUSE button.

Adjusting method (PAL):

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	03	
3	D	CA		Change the data and set the voltage (A) to the specified value.
4	D	CA		Read the data and this data is named D_{CA}.
5				Convert Dref to decimal notation and obtain D_{CA}'. (Note)
6				Calculate using following equations (decimal calculation). $D_{CA}' = D_{ref}' - 4$
7				Convert D_{CA}' to a hexadecimal number, and obtain D_{CA}. (Note)
8	D	CC	D_{CA}	Press PAUSE button.

Note: Refer to table 5-2-2. "Hexadecimal-decimal conversion table".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	

5. Backlight Consumption Current Adjustment (VF-141 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	+Probe: Pin ⑳ of CN803 (EVF_BL_4.75 V) on FC-85 board -Probe: Pin ⑲ of CN803 (EVF_BL) on FC-85 board
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	C6
Specified Value	A = 15.0 ± 1 mV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	02	
3	D	C6		Change the data and set the DC voltege (A) to the specified value.
4	D	C6		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	

6. White Balance Adjustment (VF-141 board)

Correct the white balance.
If deviated, the EVF screen color cannot be reproduced.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Check on the EVF display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	C1, C2
Specified Value	The EVF screen should not be colored.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	02	
3	D	C1 C2	A8 78	Press PAUSE button. (Initial value)
4				Check that the EVF screen is not colored, If not colored, proceed to "Processing after Completing Adjustments"
5	D	C1 C2		Change the data and so that the EVF screen is not colored. (Note)

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button each time to set the data.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	

1-6. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the specified values of “VIDEO SYSTEM ADJUSTMENTS” are satisfied.

Note 1: The back light (fluorescent tube) is driven with high voltage AC power. Therefore, do not touch the back light directly, otherwise you will feel an electric shock.

Note 2: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.

Note 3: Set the LCD BRIGHT (Menu display) to the center.

[Adjusting connector]

Most of the measuring points for adjusting the LCD system are concentrated in CN803 of the FC-85 board.

Connect the Measuring Instruments via the CPC-12 jig (J-6082-436-A).

The following table shows the Pin No. and signal name of CN803.

Pin No.	Signal Name	Pin No.	Signal Name
1	FDDRF_B	12	LANC_OUT
2	FDDRF_A	13	MAKER_RECOG
3	INDEX	14	PF7
4	REG_GND	15	TXD
5	N. C.	16	RXD
6	TRACK_00	17	RESET
7	HSY	18	HI_VDD
8	COM	19	EVF_BL+ (N.C.)
9	VG	20	EVF_BL_4.75 (N.C.)
10	HI_UNREG	21	EVF_VG (N.C.)
11	LANC_IN	22	EVF_VCO (N.C.)

[LCD type check]

By measuring the resistor value between Pin ⑬ of CN803 and Pin ④ of CN803, the type LCD can be discriminated.

FC-85 board CN803

Resistor value	LCD type
4.7 kΩ	TYPE S
47 kΩ	TYPE C

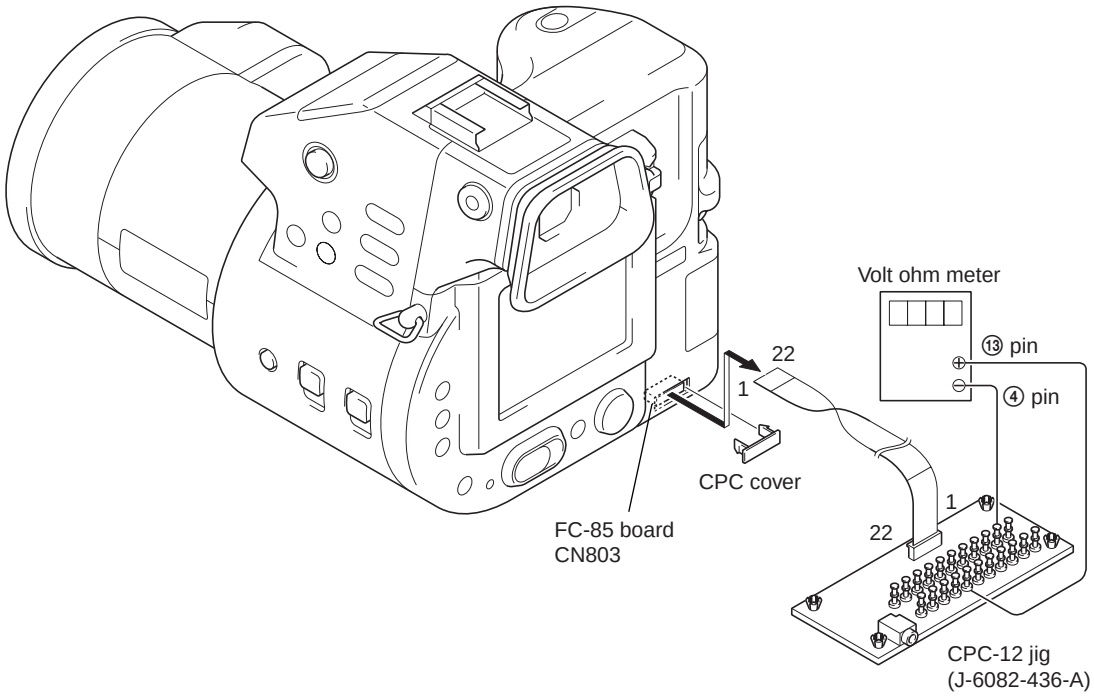


Fig. 5-1-28

Alignment disk (Disk-1, Disk-2)
(A set of alignment disks consists of two disks as a pair.)
Disk-1: 8-967-990-01
(TFD2-1 (+)) (+17.5 µm)
Disk-2: 8-967-990-11
(TFD2-2 (–)) (–17.5 µm)

[Common signals in the disks]

Data Code	Signal
MVC-001C.JPG	Color bars
MVC-002M.JPG	Monoscope
MVC-003V.JPG	V. COM adjustment signal
MVC-004W.JPG	100% white
MVC-005H.JPG	50% white
MVC-006T.JPG	Stair-step signal of 10 steps
MVC-007R.JPG	Red single color
MVC-008G.JPG	Green single color
MVC-009B.JPG	Blue single color
MVC-010D.JPG	Camera color bars
MVC-011N.JPG	Camera monoscope

• Contents of alignment disk-1
(Common signal) + (+17.5 µm alignment)
• Contents of alignment disk-2
(Common signal) + (–17.5 µm alignment)

1. LCD Initial Data Input

Mode	PLAY
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	D0 to D9, DC to DF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, and enter the data given in the following table.

Note: Press the PAUSE button each time the data are set, as the data are written to non-volatile memory (EEPROM).

Address	Data		Remark
	TYPE S	TYPE C	
D0	A2	B2	Bright adjustment
D1	70	74	Color adjustment
D2	A0	A8	White blance adjustment
D3	7A	7A	
D4	B8	C0	Contrast adjustment
D5	B0	54	D range adjustment
D6	68	8A	V-COM level adjustment
D7	6F	6F	VCO adjustment (NTSC)
D8	7A	8A	V-COM adjustment
D9	6E	6E	Fixed value
DC	B9	B5	
DD	6F	5F	VCO adjustment (PAL)
DE	13	13	Fixed value
DF	00	00	

Processing after Completing Adjustments:
1) Select page: 0, address: 01, and set data: 00.

2. VCO Adjustment (FC-85 Board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑦ of CN803 (HSY)
Measuring Instrument	Frequency counter
Adjustment Page	D
Specified Value	D7 (NTSC) DD (PAL)
Specified Value	TYPE S: f = 15734 ± 30 Hz (NTSC) f = 15745 ± 30 Hz (PAL) TYPE C: f = 15734 ± 30 Hz (NTSC) f = 15945 ± 30 Hz (PAL)

Menu setting:

1) VIDEO OUT of SET UP menu..... NTSC (NTSC mode)
(This adjustment must be performed in NTSC mode, so don't set the menu setting to "PAL")

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F0	01	
3	D	D7		Change the data and set the frequency (f) to the NTSC specified value.
4	D	D7		Press PAUSE button.
4	D	DD		Change the data and set the frequency (f) to the PAL specified value.
5	D	DD		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F0	00	
2	0	01	00	

3. D Range Adjustment (FC-85 Board)

Set the D range of the LCD driver to the specified value.
If deviated, the LCD screen will became blackish or saturated (whitish)

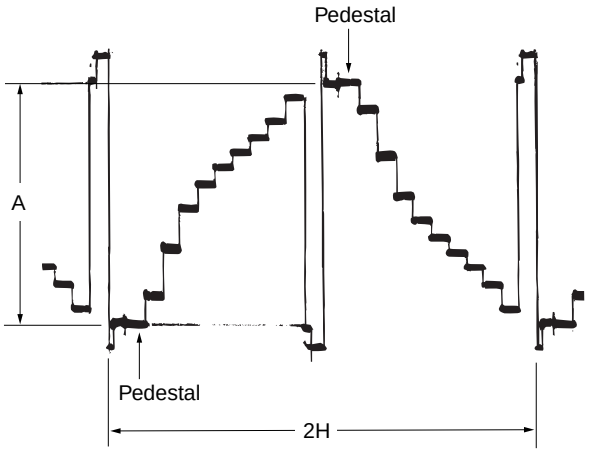
Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN803 (VG) External trigger: Pin ⑧ of CN803 (COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D5
Specified Value	A = 3.62 ± 0.05 Vp-p (TYPE S) A = 2.50 ± 0.05 Vp-p (TYPE C)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	03	
3	D	D5		Change the data and set the voltage (A) to the specified value.
4	D	D5		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	



A: Pedestal level difference between 1H period and previous 1H period.

Fig. 5-1-29

4. Bright Adjustment (FC-85 Board)

Set the level of the VIDEO signal for driving the LCD to the specified value.
If deviated, the LCD screen image will be blackish or saturated (whitish).

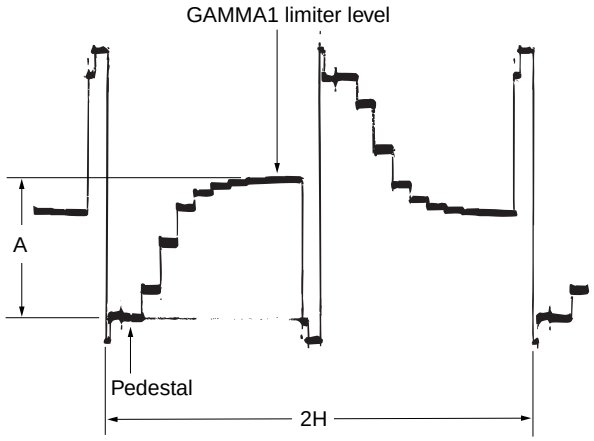
Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN803 (VG) External trigger: Pin ⑧ of CN803 (COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D0
Specified Value	A = 2.15 ± 0.05 Vp-p (TYPE S) A = 1.28 ± 0.05 Vp-p (TYPE C)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	2	10	01	
3	5	F1	03	
4	D	D0		Change the data and set the voltage (A) to the specified value.
5	D	D0		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	2	10	00	
3	0	01	00	



A: Between the pedestal and GAMMA1 limiter level

Fig. 5-1-30

5. Contrast Adjustment (FC-85 Board)

Set the level of the VIDEO signal for driving the LCD to the specified value.
If deviated, the LCD screen image will be blackish or saturated (whitish).

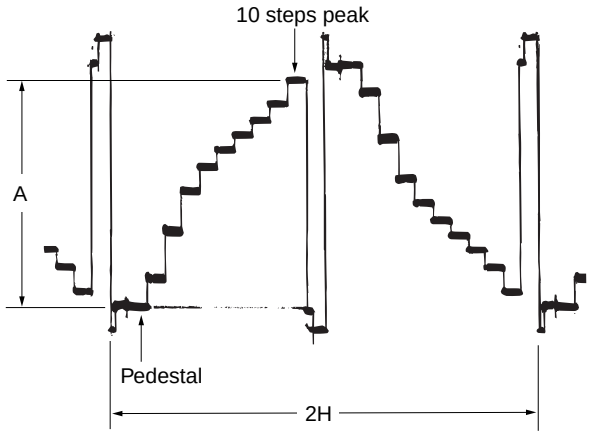
Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN803 (VG) External trigger: Pin ⑧ of CN803 (COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D4
Specified Value	A = 3.17 ± 0.07 Vp-p (TYPE S) A = 2.35 ± 0.07 Vp-p (TYPE C)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	03	
3	D	D4		Change the data and set the voltage (A) to the specified value.
4	D	D4		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	



A: Between the pedestal and 10 steps peak

Fig. 5-1-31

6. Color Adjustment (FC-85 Board)

Set the color saturation to the standard value.
If, deviated, the color will be dark or light.

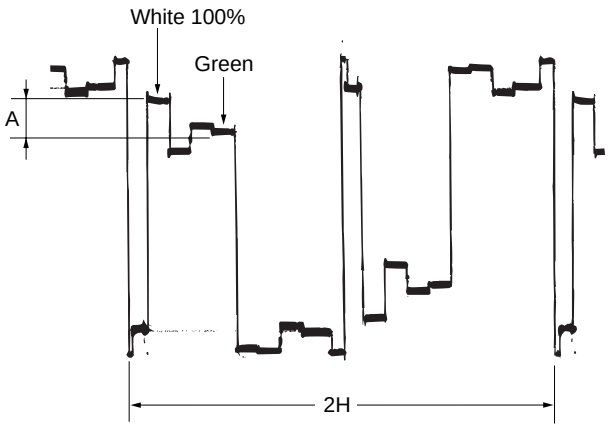
Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑨ of CN803 (VG) External trigger: Pin ⑧ of CN803 (COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D1
Specified Value	A = 480 ± 50 mVp-p (TYPE S) A = 360 ± 50 mVp-p (TYPE C)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	04	
3	D	D1		Change the data and set the voltage (A) to the specified value.
4	D	D1		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	



A: Between the white 100% (Reference level) and green

Fig. 5-1-32

7. V-COM Level Adjustment (FC-85 Board)

Set the common electrode drive signal level of LCD to the specified value.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Pin ⑧ of CN803 (COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	D6
Specified Value	A = 6.50 ± 0.05 Vp-p (TYPE S) A = 5.65 ± 0.05 Vp-p (TYPE C)

Adjusting method:

Order	Page	Address	Data	Procedur
1	0	01	01	
2	5	F1	03	
3	D	D6		Change the data and set the VCOM signal level (A) to the specified value.
4	D	D6		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedur
1	5	F1	00	
2	0	01	00	

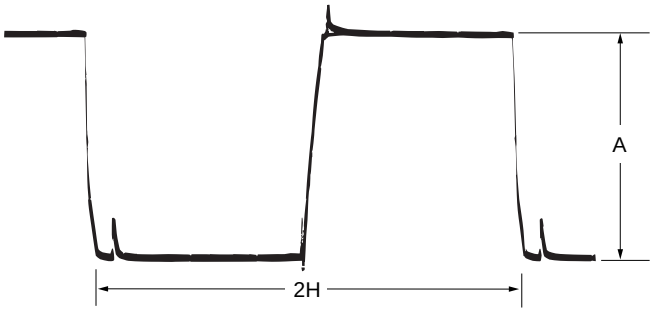


Fig. 5-1-33

8. V-COM Adjustment (FC-85 Board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	D
Adjustment Address	D8
Specified Value	The brightness difference between the section-A and section-B is minimum

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	02	
3	2	10	02	
4	D	D8		Change the data so that the brightness of the section A and section B is equal.
5	D	D8		Press PAUSE button.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	2	10	00	
3	0	01	00	

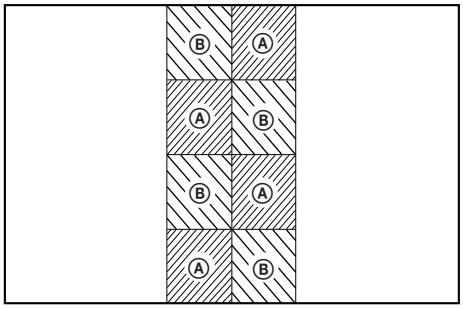


Fig. 5-1-34

9. White Balance Adjustment (FC-85 Board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	D
Adjustment Address	D2, D3
Specified Value	LCD screen must not be colored

Note: Check the white balance only when replacing the following parts.
If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC902

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	5	F1	02	
3	D	D2 D3	A8 80	Press PAUSE button. (Initial value) (Note 2)
4				Check that the LCD screen is not colored, If not colored, proceed to "Processing after Completing Adjustments"
5	D	D2 D3		Change the data and so that the LCD screen is not colored. (Note 2)

Note 2: To write in the non-volatile memory (EEPROM), press the PAUSE button each time to set the data.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	5	F1	00	
2	0	01	00	

1-7. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Battery Down Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of battery will shorten.
The image at the battery end will also be rough.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Displayed data of page: 2, address: 52
Measuring Instrument	Adjusting remote commamder
Adjustment Page	D
Adjustment Address	90 to 94

Connection:

1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-1-35.

Preparations before adjustment:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1 ± 0.1 Vdc.
2) Turn on the HOLD switch of the adjusting remote commander.
3) Turn on the power supply.
4) Set the CAMERA mode.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2				Decrease the output voltage of the regulated power supply so that digital voltmeter display is 5.55 ± 0.01 Vdc.
3	2	52		Read the data and this data is named Dref.
4	D	90	Dref	Press PAUSE button.
5				Convert Dref to decimal notation and obtain Dref'. (Note)
6				Calculate D_{91}', D_{92}', D_{93}'and D_{94}'using following equations (decimal calculation). D_{91}'= Dref' + 5 D_{92}'= Dref' + 23 D_{93}'= Dref' + 44 D_{94}'= Dref' + 55
7				Convert D_{91}', D_{92}', D_{93}'and D_{94}'to a hexadecimal number, and obtain D_{91}, D_{92}, D_{93} and D_{94}. (Note)
8	D	91	D_{91}	Press PAUSE button.
9	D	92	D_{92}	Press PAUSE button.
10	D	93	D_{93}	Press PAUSE button.
11	D	94	D_{94}	Press PAUSE button.

Note: Refer to table 5-2-2 "Hexadecimal-decimal conversion table".

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	0	01	00	

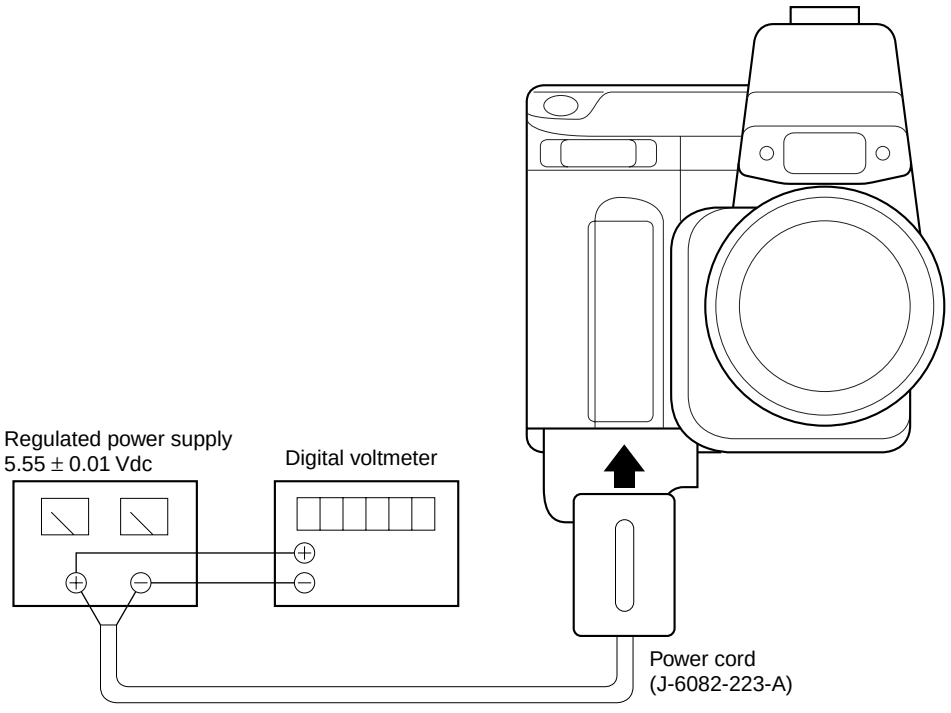


Fig. 5-1-35

2. ZOOM Center Adjustment

Set normal position (center value) of ZOOM lever.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Displayed data of page: 2 address: 5C (Note 2)
Measuring Instrument	Adjusting remote commander
Adjustment Page	D
Adjustment Address	89

Note 1: Before adjustment, make sure that the ZOOM lever is in mechanical center position.

Note 2: Displayed data of page: 2, address: 5C of the adjusting remote commander.

2:XX:5C
└— Displayed data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	2	5C		Read the data and this data is named Dref.
3	2	5C		Check the data. 5D to 99: Normal 00 to 5C and 9A to FF: Defective
4	D	89	D_{89}	Press PAUSE button. (See table below)

Dref	D_{89}
5D to 6B	6C
6C to 8A	Dref
8B to 99	8A

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	0	01	00	

3. Eye Sensor Adjustment

Mode	CAMERA
Subject	White chart (30 cm × 30 cm)
Measurement Point	Displayed data of page: 2, address: 82
Measuring Instrument	Adjusting remote commamder
Adjustment Page	D
Adjustment Address	EC

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2				Set the white chart. (10 cm from the front of the EVF)
3	2	82		Read the data and this data is named Dref.
4				Convert Dref to decimal notation and obtain Dref'. (Note)
5				Calculate using following equations (decimal calculation). D_{EC}'= Dref' – 16
6				Convert D_{EC}' to a hexadecimal number, and obtain D_{EC}. (Note)
7	D	EC	D_{EC}	Press PAUSE button.

Note: Refer to table 5-2-2 "Hexadecimal-decimal conversion table".

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	0	01	00	

4. Eye Sensor Check

Mode	CAMERA
Subject	White chart (30 cm × 30 cm)
Measurement Point	Displayed data of page: 2, address: 41
Measuring Instrument	Adjusting remote commamder

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2				Set the white chart. (15 cm from the front of the EVF)
3	2	41		Check the data changes to “00”.
4				Set the white chart. (8 cm from the front of the EVF)
5	2	41		Check the data changes to “04”.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	0	01	00	

5. Alignment Check (FDD Unit)

Confirm that the FDD alignment is within the specifications. If deviated, reading and writing data from and to floppy disk become impossible.
Or compatibility of floppy disk with other machines can be lost.

Mode	PLAY
Signal	Alignment disks (TFD2-1 (+)) and (TFD2-2 (–)): Arbitrary signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Specified Value	The playback pictures should be normal

Checking method:

1) Disconnect the adjusting remote commander.
2) Insert the alignment disk TFD2-1 (+) (+17.5 um).
3) Playback arbitrary signal and check that the playback picture is normal.
4) Insert the alignment disk TFD2-2 (–) (–17.5 um).
5) Playback arbitrary signal and check that the playback picture is normal.

5-2. SERVICE MODE

2-1. ADJUSTING REMOTE COMMANDER

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Used the Adjusting Remote Commander

1) Connect the adjusting remote commander to the CN803 on the FC-85 board via CPC-12 jig (J-6082-436-A).
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).
3) Turn on the power with the POWER switch of the unit.

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-2-1.

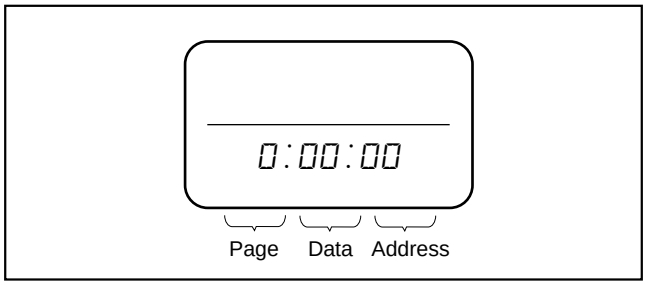


Fig. 5-2-1

4) Operate the adjusting remote commander as follows.
   • Changing the page
   The page increases when the EDIT SEARCH + button is pressed, and decreases when the EDIT SEARCH – button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-2-1

   • Changing the address
   The address increases when the FF (▶▶) button is pressed, and decreases when the REW (▶▶) button is pressed. There are altogether 256 addresses, from 00 to FF.
   • Changing the data (Data setting)
   The data increases when the PLAY (►) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   • Writing the adjustment data
   The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed)

2. Precautions upon Using the Adjusting Remote Commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

2-2. DATA PROCESS

The calculation of the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-2-2. indicates the hexadecimal notation- the decimal notation, calculation table.

Hexadecimal nontation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (R)	B (b)	C (c)	D (d) ← ②	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (R)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note : ( ) indicate the adjusting remote control unit display.

(Example) In the case that the adjusting remote control unit display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the① and ② in the above table is the decimal notation to be calculated.

Table 5-2-2

2-3. SERVICE MODE

1. Setting the Test Mode

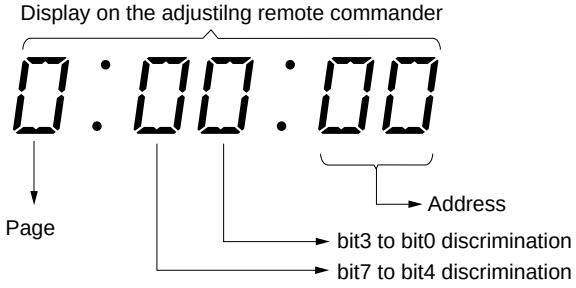
Page D	Address 10

Data	Function
00	Normal
01	Forced CAMERA mode power ON
02	Forced PLAY mode power ON
03	Forced MOVIE mode power ON

- Before setting the data, select page: 0, address: 01, and set data: 01.
- For page D, the data set is recorded in the non-volatile memory by pressing the PAUSE button of the adjusting remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off.
- After completing adjustments/repairs, be sure to return the data of this address to "00", and press the PAUSE button of the adjusting remote commander.
  Select page: 0, address: 01, and set data: 00.

2. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for following items. Use the table below to discriminate if the bit value is "1" or "0".



	Display on the Adjusting remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (R)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

Example: If "8E" is displayed on the adjusting remote commander, the bit values for bit7 to bit4 are shown in the Ⓐ column, and the bit values for bit3 to bit0 are shown in the Ⓑ column.

3. Switch Check (1)

Page 2	Address 43

Bit	Function	When bit value=1	When bit value=0
0	XPOWER SW (PK-55 board S703)	OFF	ON
1	XCAM/PLAY SW (PK-55 board S707)	PLAY	CAMERA
2	SHUTTR SW (CONTROL SWITCH BLOCK S001)	OFF	ON
3	XSHUTTER LOCK SW (CONTROL SWITCH BLOCK S001)	OFF	ON
4	MEMORY STICK IN SW (MS Socket)	OUT	IN
5			
6			
7	XSTILL/MOVIE SW (PK-55 board S709)	MOVIE	STILL

Using method:

1) Select page: 2, address: 43.
2) By discriminating the bit value of dispaly data, the state of the switches can be discriminated.

4. Switch Check (2)

Page 2	Address 48

Bit	Function	When bit value=1	When bit value=0
0	DISK/XMS SW (FC-85 board S401)	FLOPPY DISK	MEMORY STICK

Using method:

1) Select page: 2, address: 48.
2) By discriminating the bit value of dispaly data, the state of the switches can be discriminated.

5. Switch Check (3)

Page 2	Address 54 to 59

Using method:
1) Select page: 2, addresses: 54 to 59.
2) By discriminating the dispaly data, the pressed key can be discriminated.

Address	Data						
	00 to 12	13 to 3A	3B to 62	63 to 87	88 to B3	B4 to D5	D6 to FF
54 (KEY AD0) (IC404 ⑱)					MACRO (CF-83 board) (S401)	FOCUS (CF-83 board) (S402)	
55 (KEY AD1) (IC404 ⑲)	CONTROL DOWN (PK-55 board) (S701)	CONTROL UP (PK-55 board) (S701)	DISPLAY (PK-55 board) (S702)	VOLUME+ (PK-55 board) (S704)	VOLUME– (PK-55 board) (S706)	LCD ON/OFF (PK-55 board) (S708)	
56 (KEY AD2) (IC404 ⑳)	CONTROL RIGHT (PK-55 board) (S701)	CONTROL LEFT (PK-55 board) (S701)	CONTROL SET (PK-55 board) (S701)	FLASH (PK-55 board) (S705)			
57 (KEY AD3) (IC404 ㉑)						STEADY SHOT (CF-83 board) (S403)	
58 (KEY AD4) (IC404 ㉒)	PROGRAM AE+ (AE-25 board) (S356)	PROGRAM AE– (AE-25 board) (S355)	PROGRAM AE (AE-25 board) (S354)	WHITE BALANCE (AE-25 board) (S353)	ONE-PUSH WHITE BALANCE (AE-25 board) (S352)	SPOT METER (AE-25 board) (S351)	
59 (KEY AD5) (IC404 ㉓)						OPEN (FLASH) (FLASH UNIT)	

6. LED Check

Page 2	Address 06	Data 02

Using method:
1) Select page: 2, address: 06, and set data: 02.
2) Check that all LED except for the ACCESS LED are lit.
3) Select page: 2, address: 06, and set data: 00.

7. Self Diagnosis Code

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:01	Change the disk and turn off the main power then back on.	Defective floppy disk.	DRIVE ERROR
C:13:01	Replace the floppy disk or “Memory Stick”. Format the floppy disk or “Memory Stick” with the MVC-FD97.	• The type of floppy disk that cannot be used by this machine, is inserted. (Such as 2DD) • Data is damaged. • Unformatted disk or “Memory Stick” is inserted.	DISK ERROR MEMORY STICK ERROR
E:91:01	Checking of flash unit or replacement of flash unit	Abnormality when flash is being charged. *1	Flash LED Flash display Flashing at 3.2 Hz
E:61:00	Checking of lens drive circuit	When failed in the focus initialization.	—
E61:10			

Note : The error code is cleared if the battery is removed, except defective flash, unit.
*1: When the flash charging failed, Page: D, Address: 67, Data: 04 are written.
After repair, be sure to write Page: D, Address: 67, Data: 00.

[Power supplying Method]

Use the AC power adaptor (AC-L10A) when supplying the power to this set.

SECTION 6
REPAIR PARTS LIST

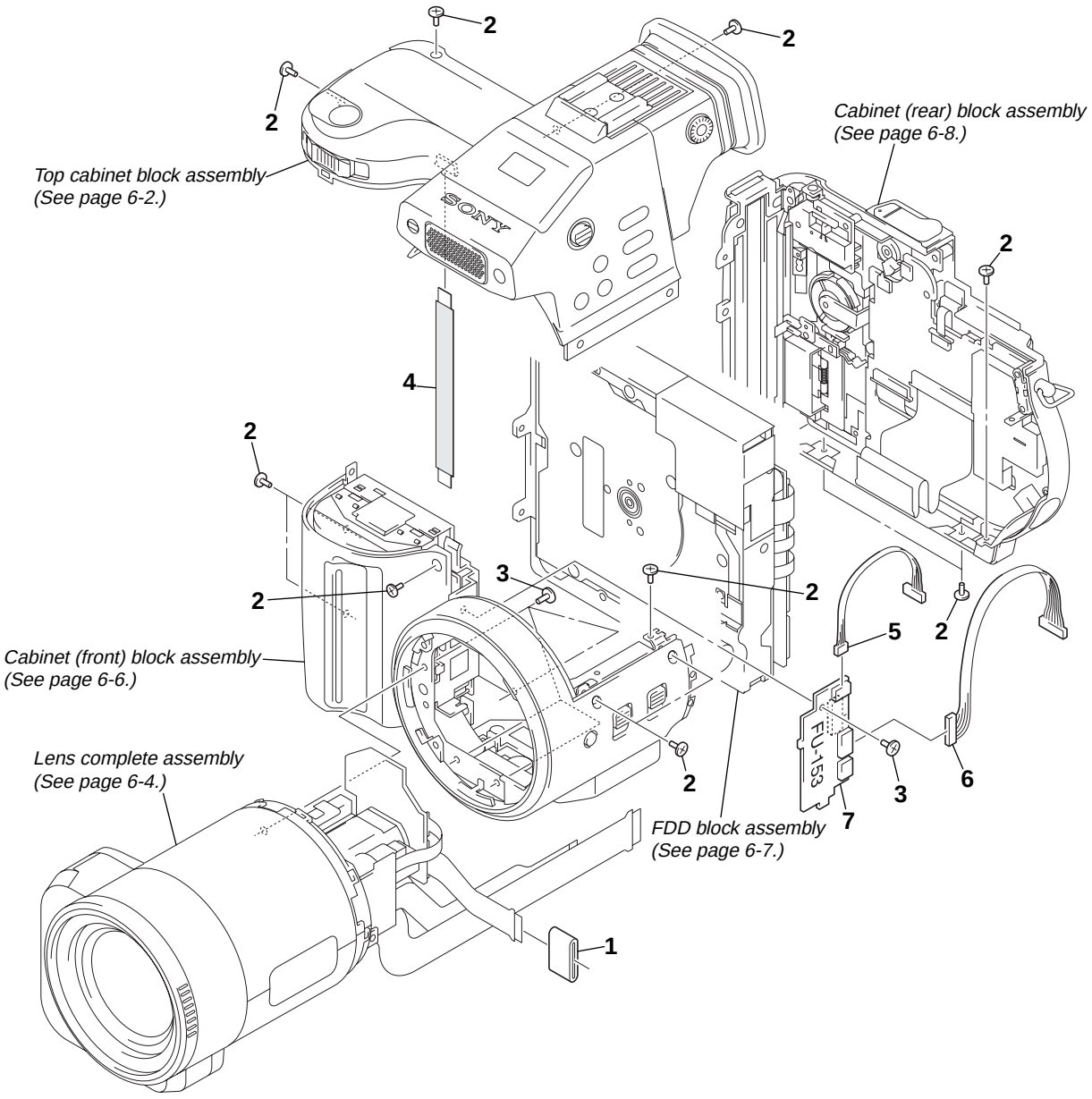
6-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

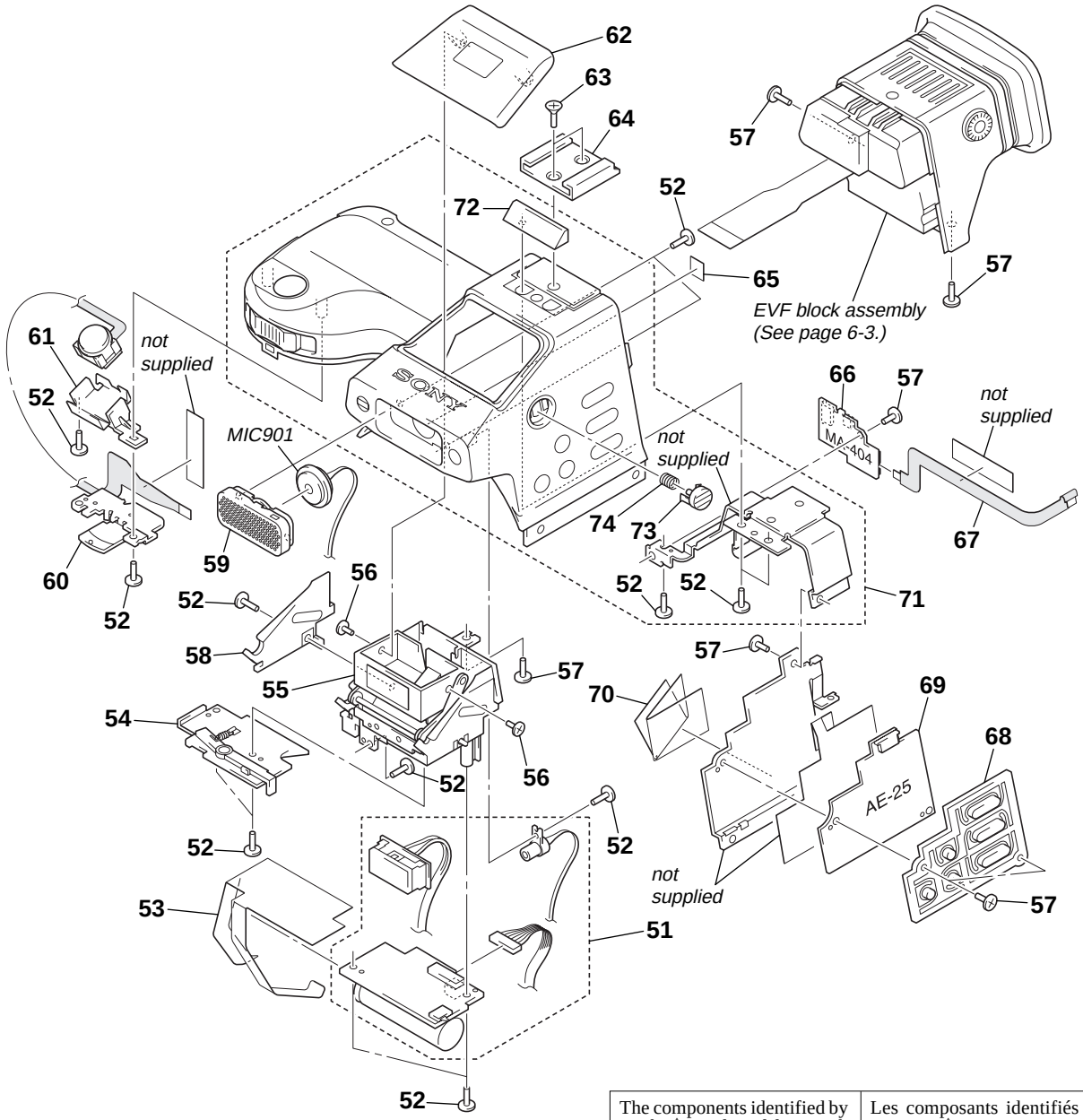
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. MAIN SECTION



Ref. No.	Part No.	Description	Remark
1	1-500-226-41	BEAD, FERRITE	
2	3-968-729-91	SCREW (M2), LOCK ACE, P2	
3	3-968-729-51	SCREW (M2), LOCK ACE, P2	
4	1-678-325-11	FP-171 FLEXIBLE BOARD	
5	1-960-553-11	HARNESS (FU-54)	
6	1-960-552-11	HARNESS (FU-53)	
7	A-7074-794-A	FU-153 BOARD, COMPLETE	

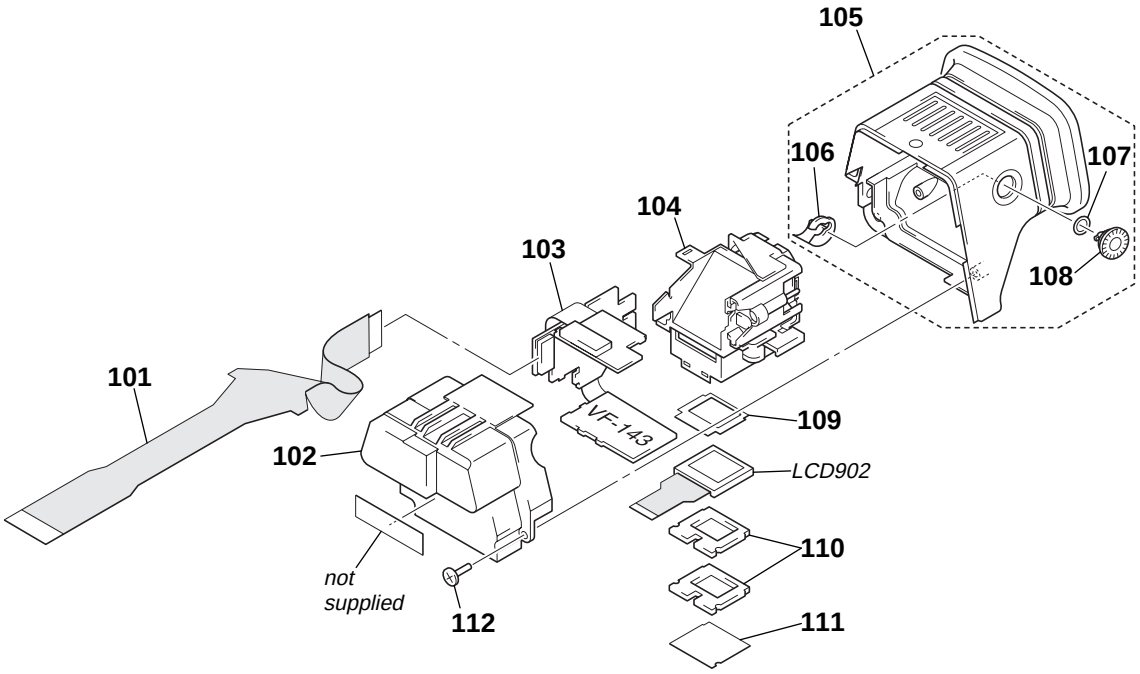
6-1-2. TOP CABINET BLOCK ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

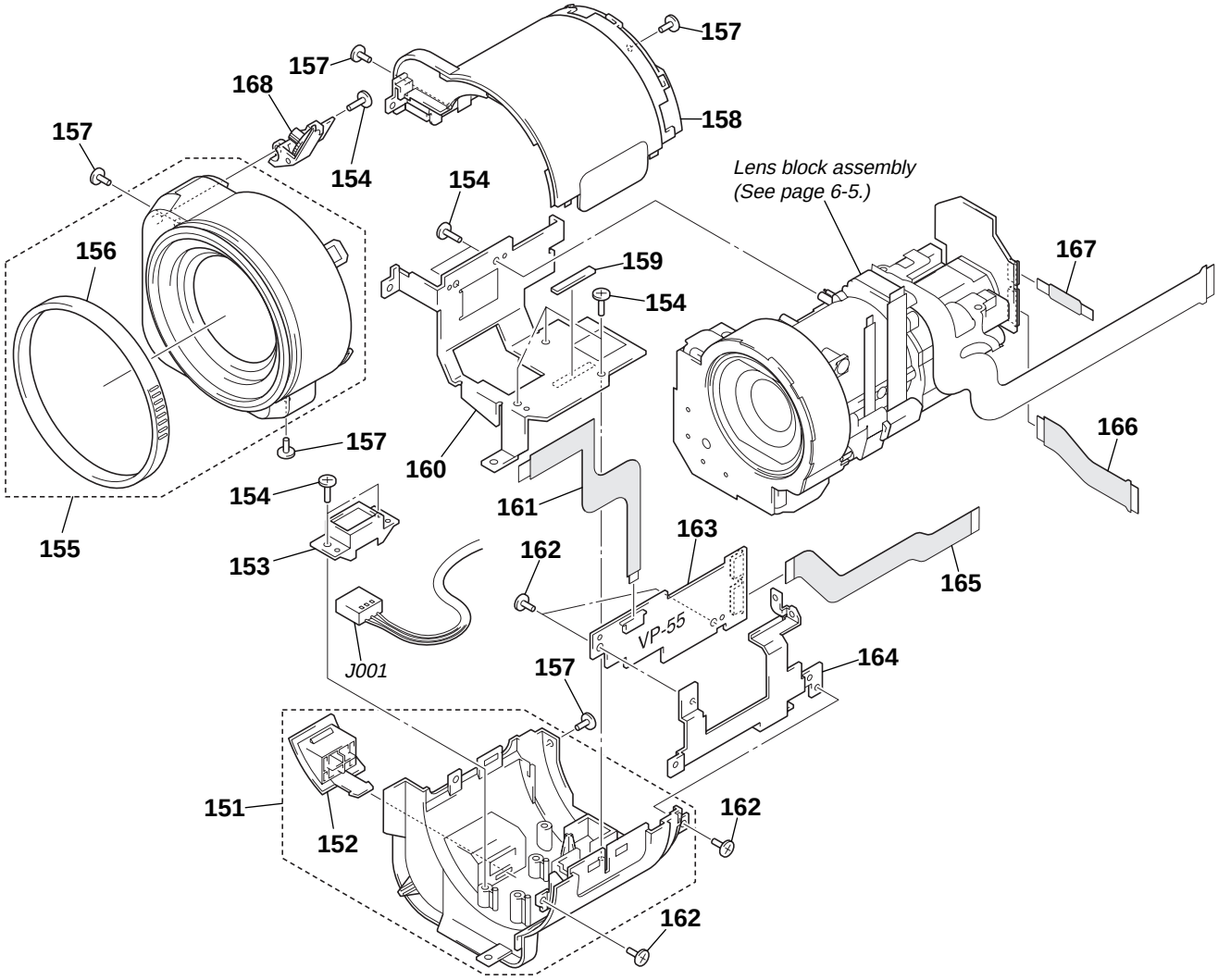
Ref. No.	Part No.	Description	Remark
⚠51	1-476-559-11	FLASH UNIT	
52	3-948-339-61	TAPPING	
* 53	3-063-352-01	SHEET (ST)	
54	X-3950-615-1	BLIND ASSY	
55	X-3950-613-1	ST ASSY	
56	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
57	3-968-729-91	SCREW (M2), LOCK ACE, P2	
58	3-060-871-01	BASE, TILT	
59	X-3951-508-1	GRILLE ASSY, MICROPHONE	
60	1-418-896-11	SWITCH BLOCK, CONTROL	
61	3-060-905-01	HOLDER (360), SW	
62	X-3951-511-1	CABINET (UPPER) ASSY, ST	
63	3-067-187-01	ACE, PLATE SCREW (M2) LOCK	
64	3-067-469-01	SHOE, ACCESSORY	
65	3-062-299-01	SHEET, MICROPHONE	
66	A-7074-799-A	MA-404 BOARD, COMPLETE	
67	1-678-328-11	FP-174 FLEXIBLE BOARD	
68	3-060-898-11	BUTTON, AE	
69	A-7074-800-A	AE-25 BOARD, COMPLETE	
* 70	3-062-816-01	SHEET, WATERPROOF	
71	X-3951-507-1	CABINET ASSY, TOP	
72	3-067-471-01	STOPPER (H), SHOE	
73	3-060-868-11	BUTTON, OPEN	
74	3-062-824-01	SPRING, OPEN	
MIC901	1-542-428-11	MICROPHONE UNIT	

6-1-3. EVF BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	1-678-327-12	FP-173 FLEXIBLE BOARD	
102	3-060-922-01	LID, VF	
103	A-7074-453-A	VF-143 BOARD, COMPLETE	
104	X-3950-617-1	LENS ASSY, VF	
105	X-3951-509-1	CABINET ASSY, VF	
106	3-060-921-01	ARM, VISIBILITY ADJUSTMENT	
107	3-950-044-01	RING, O	
108	3-060-836-11	KNOB, VISIBILITY ADJUSTMENT	
* 109	3-058-232-01	CUSHION (1) (97), LCD	
* 110	3-058-234-02	CUSHION (2) (97), LCD	
111	3-058-233-01	ILLUMINATOR (97), BL	
112	3-948-339-61	TAPPING	
LCD902	8-753-028-54	LCX033AN-1	

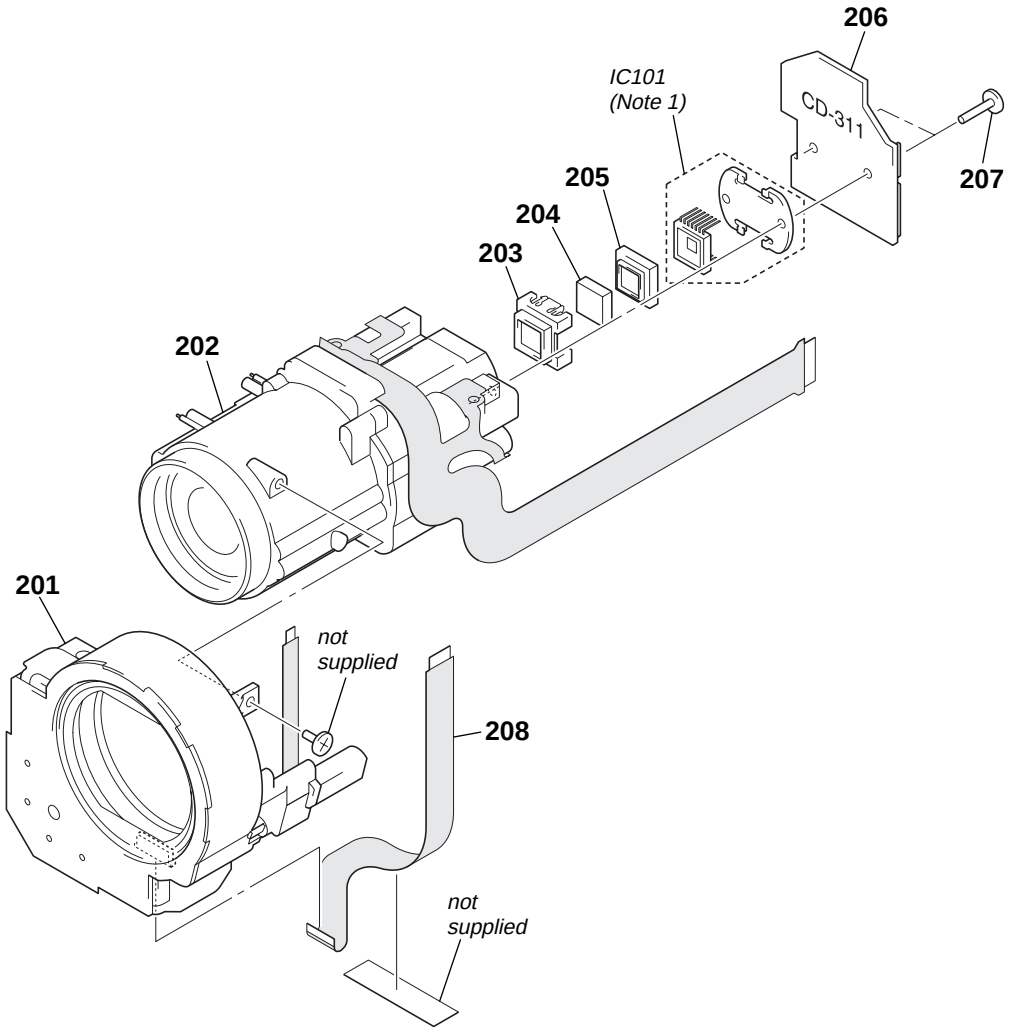
6-1-4. LENS COMPLETE ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	X-3950-618-1	CABINET (LB) ASSY	
152	3-060-893-01	COVER, DC IN	
153	3-060-914-01	HOLDER, DC	
154	3-948-339-61	TAPPING	
155	X-3950-611-1	CABINET (VP) ASSY	
156	3-060-854-01	BAND, RING	
157	3-968-729-91	SCREW (M2), LOCK ACE, P2	
158	3-060-890-01	CABINET (LT)	
* 159	3-970-496-01	SHEET, DRUM	
* 160	3-060-894-01	FRAME, LENS	

Ref. No.	Part No.	Description	Remark
161	1-678-330-11	FP-177 FLEXIBLE BOARD	
162	3-968-729-51	SCREW (M2), LOCK ACE, P2	
163	A-7074-793-A	VP-55 BOARD, COMPLETE	
* 164	3-060-892-01	PLATE, VP FIXED	
165	1-678-323-11	FP-169 FLEXIBLE BOARD	
166	1-678-321-11	FP-166 FLEXIBLE BOARD	
167	1-678-324-11	FP-170 FLEXIBLE BOARD	
168	1-418-068-11	MF BLOCK	
J001	1-794-045-31	CONNECTOR, DC-IN	

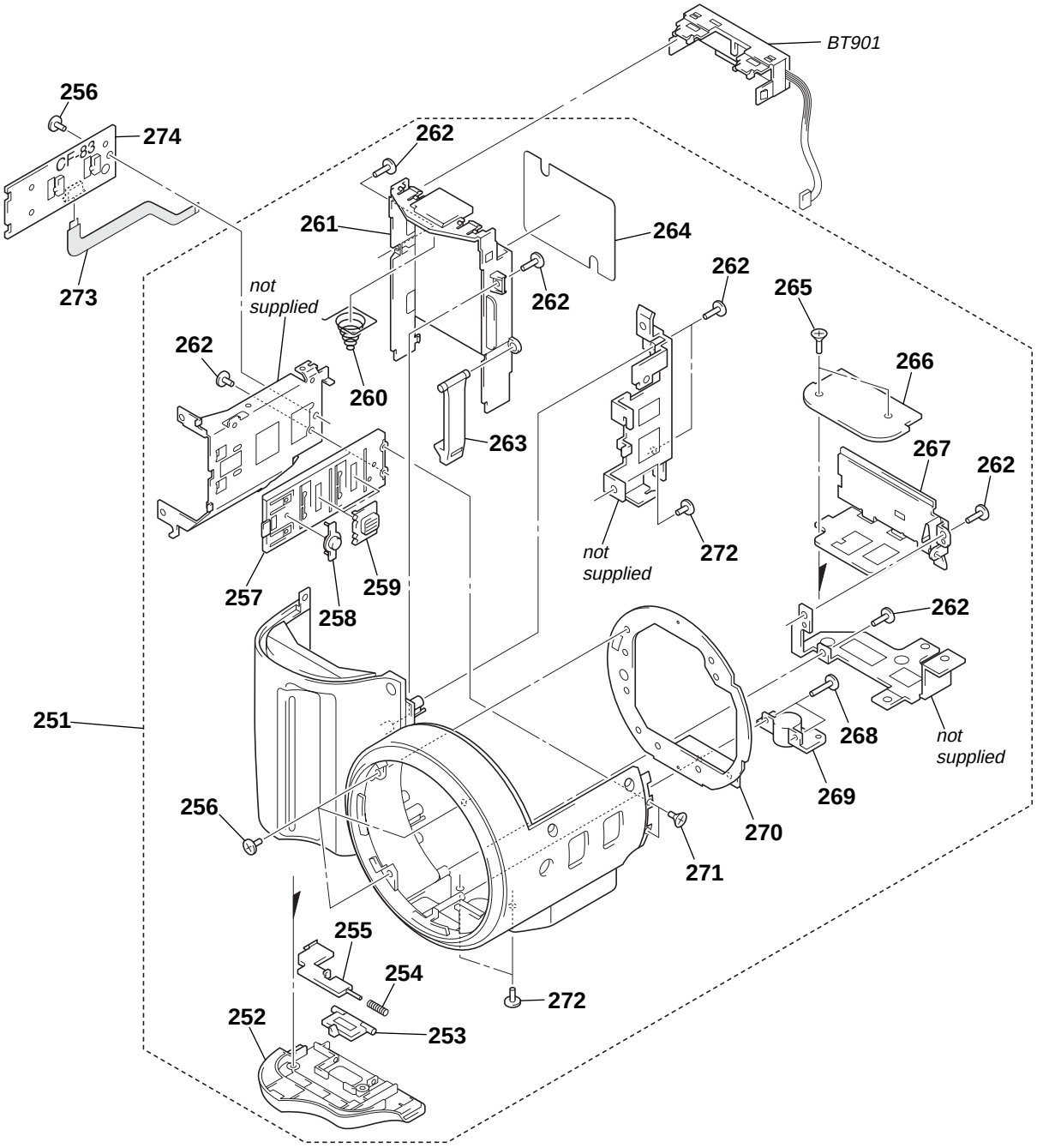
6-1-5. LENS BLOCK ASSEMBLY



(Note 1) Be sure to read "Precuations for Replacement of CCD Imager" on page 4-8 when changing the CCD imager.

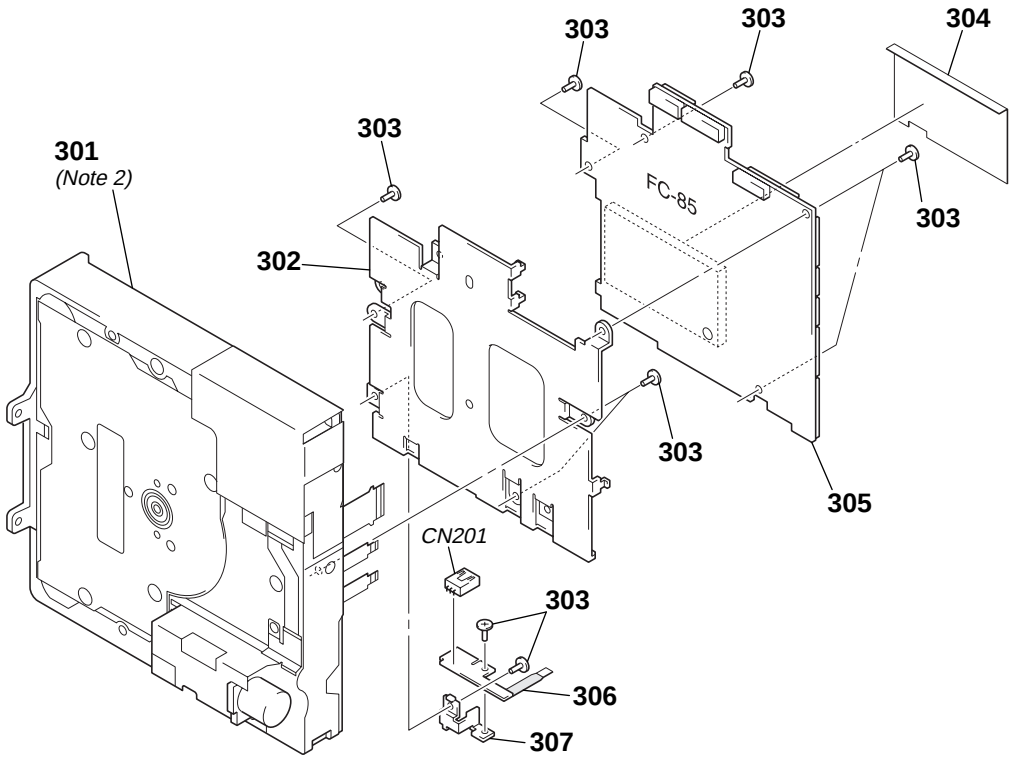
Ref. No.	Part No.	Description	Remark
201	3-709-575-01	VAP ASSY	
202	3-709-576-01	LENS ASSY	
203	3-058-032-01	ADAPTOR (CL), CCD FITTING	
204	1-758-436-11	FILTER BLOCK, OPTICAL	
205	3-060-714-01	RUBBER (CL), SEAL	
206	A-7074-792-A	CD-311 BOARD, COMPLETE	
207	3-947-268-11	TITE (2), +B TAPPING (P)	
208	1-678-322-11	FP-168 FLEXIBLE BOARD	
IC101	A-7031-092-A	CCD BLOCK ASSY (CCD IMAGER) (Note 1)	

6-1-6. CABINET (FRONT) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
251	X-3951-506-1	CABINET (FRONT) ASSY	
252	3-060-842-02	LID, BATTERY	
253	3-058-748-01	KNOB, B LOCK	
254	3-058-802-01	SPRING, B LOCK	
255	3-058-749-01	LEVER, B LOCK	
256	3-968-729-51	SCREW (M2), LOCK ACE, P2	
257	3-060-895-01	HOLDER, SS	
258	3-060-897-11	BUTTON, MACRO	
259	3-060-896-11	KNOB, SS	
260	3-969-380-01	SPRING, BATTERY	
* 261	3-058-746-01	HOLDER, BATTERY	
262	3-948-339-61	TAPPING	
263	3-052-574-01	CLAW, BT LOCK	
* 264	3-058-801-01	SHEET, ST INSULATING	
265	3-736-363-41	TAPPING	
* 266	3-058-753-01	RETAINER, HINGE	
267	X-3950-246-1	HOLDER ASSY, HINGE	
268	3-713-790-31	SCREW (M2X8), TAPPING, P3	
269	3-050-468-01	SCREW, TRIPOD	
270	3-060-843-01	PLATE, L FIXED	
271	3-966-178-01	SCREW (1.7)	
272	3-719-381-01	SCREW (M2X4)	
273	1-678-326-11	FP-172 FLEXIBLE BOARD	
274	A-7074-796-A	CF-83 BOARD, COMPLETE	
BT901	1-694-297-21	TERMINAL BOARD, BATTERY	

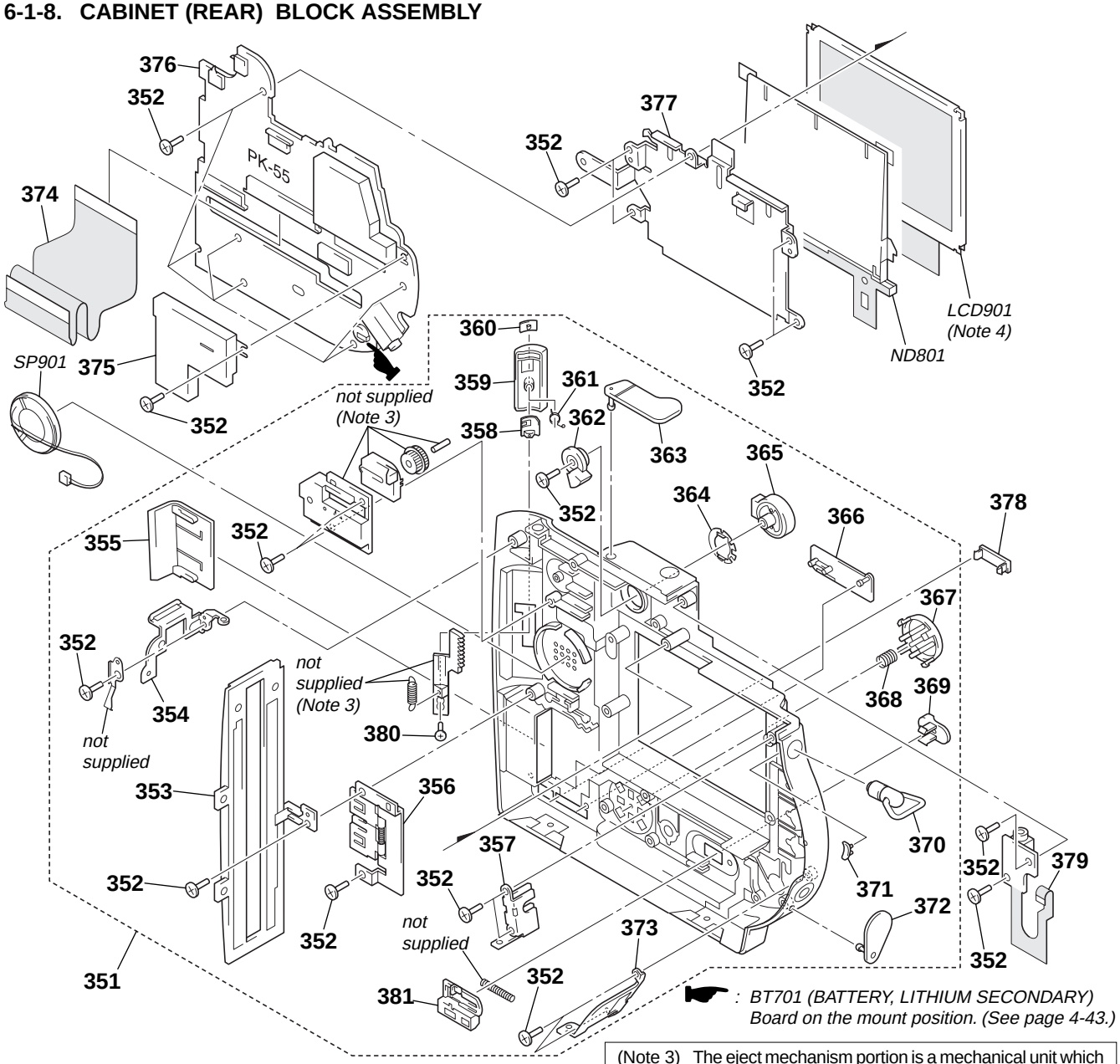
6-1-7. FDD BLOCK ASSEMBLY



(Note 2) The FD block assembly is a mechanical unit which has completely been adjusted in the factory. So never disassemble the FD block assembly.

Ref. No.	Part No.	Description	Remark
301	1-772-563-11	DRIVE, FLOPPY DISK (Note 2)	
302	3-066-780-11	BRACKET, FC	
303	3-964-010-31	SCREW (M2), 0 PART-NO. P2 MAIN	
304	3-066-806-01	SHEET, LIGHT INTERCEPTION	
305	A-7096-558-A	FC-85 BOARD, COMPLETE (SERVICE)	
306	1-680-234-11	FP-335 FLEXIBLE BOARD	
307	3-066-799-01	BRACKET, USB	
CN201	1-794-962-11	CONNECTOR, SQUARE TYPE (USB 5P)	

6-1-8. CABINET (REAR) BLOCK ASSEMBLY



(Note 3) The eject mechanism portion is a mechanical unit which has completely been adjusted in the factory. So never disassemble the eject mechanism portion.

(Note 4) About PK-55 board and LCD module, discriminate LCD type on the machine referring to page 6, and replace the same type.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
351	X-3951-505-1	CABINET (REAR) ASSY	
352	3-948-339-61	TAPPING	
353	3-067-463-01	CABINET, SIDE	
354	3-060-886-01	SHEET METAL (L), STRAP	
355	3-067-464-01	LID, MS	
356	X-3951-483-1	HINGE ASSY, MS	
357	3-060-848-01	SHEET METAL (R), STRAP	
358	3-058-784-01	RETAINER, LOCK BUTTON	
359	3-066-788-21	KNOB, EJECT	
360	3-058-783-11	BUTTON, LOCK	
361	3-058-785-01	SPRING, LOCK BUTTON	
362	3-067-468-01	RETAINER, MODE SELECTION	
363	3-067-470-01	COVER (H), ACC JACK	
364	3-060-901-01	SHEET METAL, SELECTION CLICK	
365	X-3951-545-1	MODE SELECTION KNOB (H) ASSY (SERVICE)	
366	3-067-460-01	COVER, USB JACK	
367	3-066-776-21	KNOB, FUNCTION	
368	3-066-777-01	SPRING, COMPRESSION	
369	3-060-838-11	KNOB, POWER	
370	3-060-931-01	SHAFT, STRAP	
371	3-060-932-01	DAMPER, FRICTION	
372	3-060-927-11	COVER, AV JACK	
373	3-067-467-01	SHEET METAL, AV	
374	1-678-338-11	FP-175 FLEXIBLE BOARD	
375	X-3951-612-1	CASE ASSY, Z SHIELD	
376	A-7074-797-A	PK-55 BOARD, COMPLETE (TYPE S) (Note 4)	
376	A-7074-798-A	PK-55 BOARD, COMPLETE (TYPE C) (Note 4)	
377	3-067-461-01	PLATE, BL FIXED	
378	3-066-805-11	LID, CPC	
379	1-678-329-21	FP-176 FLEXIBLE BOARD	
380	3-355-424-21	SCREW, TAPPING	
381	3-060-839-01	RETAINER, P KNOB	
LCD901	1-803-858-21	INDICATOR MODULE LIQUID CRYSTAL (TYPE S) (Note 4)	
LCD901	1-803-860-21	INDICATOR MODULE LIQUID CRYSTAL (TYPE C) (Note 4)	
⚠ND801	1-517-751-21	TUBE, FLUORESCENT,COLD CATHODE	
SP901	1-505-862-41	SPEAKER (2.0cm)	

6-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Abbreviation
  AUS : Australian model
  CND : Canadian model
  HK : Hong Kong model
  J : Japanese model
  KR : Korea model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

About PK-55 board and LCD module, discriminate LCD type on the machine referring to page 6, and replace the same type.

Ref. No.	Part No.	Description			Remark
	A-7074-800-A	AE-25 BOARD, COMPLETE			
		**********			
		(Ref.No.: 2,000 Series)			
		< CONNECTOR >			
CN351	1-766-335-21	CONNECTOR, FFC/FPC 5P			
		< RESISTOR >			
R351	1-218-971-11	RES-CHIP	33K	5%	1/16W
R352	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R353	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R354	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R355	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
		< SWITCH >			
S351	1-771-138-82	SWITCH, KEY BOARD (SPOT METER)			
S352	1-771-138-82	SWITCH, KEY BOARD (ONE-PUSH WHITE BALANCE)			
S353	1-771-138-82	SWITCH, KEY BOARD (WHITE BALANCE)			
S354	1-771-138-82	SWITCH, KEY BOARD (PROGRAM AE)			
S355	1-771-138-82	SWITCH, KEY BOARD (PROGRAM AE (-))			
S356	1-771-138-82	SWITCH, KEY BOARD (PROGRAM AE (+))			
	A-7074-792-A	CD-311 BOARD, COMPLETE			
		**********			
		(Ref.No.: 2,000 Series)			
		(IC101 is not included in this complete board)			
		< CAPACITOR >			
C101	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C102	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C103	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C104	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C105	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C106	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C107	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C108	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C109	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C150	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C151	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C152	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C153	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C156	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C157	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C158	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C159	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C160	1-110-666-11	ELECT CHIP	22uF	20%	6.3V
C161	1-110-666-11	ELECT CHIP	22uF	20%	6.3V
C162	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C163	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C164	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C165	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
		< CONNECTOR >			
CN101	1-691-356-21	CONNECTOR, FFC/FPC (ZIF) 18P			
CN102	1-573-347-11	CONNECTOR, FFC/FPC (ZIF) 7P			
		< IC >			
IC101	A-7031-092-A	CCD BLOCK ASSY (CCD IMAGER)			
IC150	8-759-489-19	IC uPC6756GR-8JG-E2			
		< COIL >			
L101	1-469-528-91	INDUCTOR	100uH		
L150	1-412-951-11	INDUCTOR	10uH		
		< TRANSISTOR >			
Q101	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q102	8-729-117-73	TRANSISTOR	2SC4178-F13F14-T1		
		< RESISTOR >			
R101	1-216-864-11	METAL CHIP	0	5%	1/16W
R102	1-218-990-11	SHORT	0		
R103	1-218-937-11	RES-CHIP	47	5%	1/16W
R104	1-216-797-11	METAL CHIP	10	5%	1/16W
R105	1-216-798-11	RES-CHIP	12	5%	1/16W
R106	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R107	1-218-981-11	RES-CHIP	220K	5%	1/16W
R108	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R109	1-218-990-11	SHORT	0		
R110	1-218-937-11	RES-CHIP	47	5%	1/16W

(Note) Be sure to read "Note on the CCD Imager Replacement" on page 4-8 when changing the CCD imager.

CD-311 **CF-83**

Ref. No.	Part No.	Description			Remark
R112	1-216-296-11	SHORT	0		
R150	1-218-969-11	RES-CHIP	22K	5%	1/16W
R151	1-218-969-11	RES-CHIP	22K	5%	1/16W
R152	1-218-969-11	RES-CHIP	22K	5%	1/16W
R153	1-218-969-11	RES-CHIP	22K	5%	1/16W
R154	1-218-990-11	SHORT	0		
R155	1-218-985-11	RES-CHIP	470K	5%	1/16W
R156	1-218-965-11	RES-CHIP	10K	5%	1/16W
R157	1-218-965-11	RES-CHIP	10K	5%	1/16W
R158	1-218-985-11	RES-CHIP	470K	5%	1/16W
R159	1-218-967-11	RES-CHIP	15K	5%	1/16W
R160	1-218-967-11	RES-CHIP	15K	5%	1/16W
		< SENSOR >			
SE150	1-803-042-31	SENSOR, ANGULAR VELOCITY (PITCH SENSOR)			
SE151	1-803-042-41	SENSOR, ANGULAR VELOCITY (YAW SENSOR)			
	A-7074-796-A	CF-83 BOARD, COMPLETE ********** (Ref.No.: 2,000 Series)			
		< CONNECTOR >			
CN401	1-766-336-21	CONNECTOR, FFC/FPC 6P			
		< RESISTOR >			
R401	1-218-971-11	RES-CHIP	33K	5%	1/16W
		< SWITCH >			
S401	1-771-138-82	SWITCH, KEY BOARD (MACRO)			
S402	1-762-741-11	SWITCH, SLIDE (FOCUS)			
S403	1-762-741-11	SWITCH, SLIDE (STEADY SHOT)			

Electrical parts list of the FC-85 board is not shown.
Pages 6-11 to 6-18 are not shown.

Ref. No.	Part No.	Description			Remark
	A-7074-794-A	FU-153 BOARD, COMPLETE			
		**********			
					(Ref.No.: 2,000 Series)
		< CAPACITOR >			
C001	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
		< CONNECTOR >			
* CN001	1-580-056-21	PIN, CONNECTOR (SMD) 3P			
* CN002	1-580-057-11	PIN, CONNECTOR (SMD) 4P			
CN003	1-770-622-21	PIN, CONNECTOR 5P			
CN004	1-770-629-21	PIN, CONNECTOR 12P			
		< DIODE >			
D001	8-719-158-49	DIODE MA8120-TX			
D002	8-719-027-76	DIODE 1SS357-TPH3			
D003	8-719-075-15	DIODE MAZT082H08S0			
		< FUSE >			
⚠F001	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)			
⚠F002	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)			
⚠F003	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)			
⚠F004	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)			
⚠F005	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)			
		< FERRITE BEAD >			
FB001	1-414-228-11	FERRITE	0uH		
FB002	1-414-228-11	FERRITE	0uH		
FB003	1-414-228-11	FERRITE	0uH		
		< LINE FILTER >			
LF001	1-411-957-11	FILTER, COMMON MODE			
		< TRANSISTOR >			
Q001	8-729-046-77	TRANSISTOR	SI4963DY-T1		
Q002	8-729-804-41	TRANSISTOR	2SB1122-ST-TD		
Q003	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q004	8-729-047-68	TRANSISTOR	SSM3K03FE (TPL3)		
Q005	8-729-047-68	TRANSISTOR	SSM3K03FE (TPL3)		
		< RESISTOR >			
R001	1-218-953-11	RES-CHIP	1K	5%	1/16W
R002	1-218-985-11	RES-CHIP	470K	5%	1/16W
R004	1-218-953-11	RES-CHIP	1K	5%	1/16W
R005	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R006	1-218-989-11	RES-CHIP	1M	5%	1/16W
R008	1-216-864-11	METAL CHIP	0	5%	1/16W
R019	1-218-973-11	RES-CHIP	47K	5%	1/16W
R020	1-216-150-91	RES-CHIP	10	5%	1/8W
R021	1-218-990-11	SHORT	0		

Ref. No.	Part No.	Description			Remark
	A-7074-799-A	MA-404 BOARD, COMPLETE			
		**********			
					(Ref.No.: 2,000 Series)
		< CAPACITOR >			
C303	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C304	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C305	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C306	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C307	1-119-749-11	TANTAL. CHIP	33uF	20%	4V
		< CONNECTOR >			
CN301	1-766-340-21	CONNECTOR, FFC/FPC 10P			
CN303	1-766-336-21	CONNECTOR, FFC/FPC 6P			
CN305	1-784-342-21	HOUSING, CONNECTOR 2P			
CN306	1-766-335-21	CONNECTOR, FFC/FPC 5P			
		< IC >			
IC301	8-759-339-63	IC NJM2118V-TE2			
		< COIL >			
L301	1-469-525-91	INDUCTOR	10uH		
		< RESISTOR >			
R301	1-218-952-11	RES-CHIP	820	5%	1/16W
R302	1-218-944-11	RES-CHIP	180	5%	1/16W
R303	1-218-941-11	RES-CHIP	100	5%	1/16W
R304	1-218-954-11	RES-CHIP	1.2K	5%	1/16W

Ref. No.	Part No.	Description			Remark
	A-7074-798-A	PK-55 BOARD, COMPLETE (TYPE C)			
		**********			
					(Ref.No.: 2,000 Series)
		< BATTERY >			
BT701	1-756-102-11	BATTERY, LITHIUM SECONDARY			
		< CAPACITOR >			
C705	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C706	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C710	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C711	1-164-870-11	CERAMIC CHIP	68PF	5%	16V
C801	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C802	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C803	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C804	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C805	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C806	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C807	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C808	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C811	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C812	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C813	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C814	1-165-112-11	CERAMIC CHIP	0.33uF	20%	10V
C815	1-165-112-11	CERAMIC CHIP	0.33uF	20%	10V
C816	1-165-112-11	CERAMIC CHIP	0.33uF	20%	10V
C851	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C852	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C853	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C854	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C855	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C856	1-164-856-81	CERAMIC CHIP	18PF	5%	16V
C857	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C858	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PK-55 (TYPE C)

Ref. No.	Part No.	Description			Remark
C859	1-164-860-11	CERAMIC CHIP	27PF	5%	16V
C861	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C862	1-115-156-11	CERAMIC CHIP	1uF		10V
C863	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C864	1-164-657-11	CERAMIC CHIP	0.015uF	10%	50V
C865	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
⚠C866	1-131-959-91	CERAMIC CHIP	12PF	10%	3KV
C901	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C902	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V
C903	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C904	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C905	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C906	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C907	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C908	1-164-872-11	CERAMIC CHIP	82PF	5%	16V
C909	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C911	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C912	1-164-872-11	CERAMIC CHIP	82PF	5%	16V
C913	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C916	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C917	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C918	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C919	1-107-820-11	CERAMIC CHIP	0.1uF		16V
		< CONNECTOR >			
CN701	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P			
CN702	1-784-342-11	HOUSING, CONNECTOR 2P			
CN781	1-691-344-11	CONNECTOR, FFC/FPC (ZIF) 6P			
CN851	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN901	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P			
		< DIODE >			
D701	8-719-061-81	DIODE	TLYU1002 (TPX1, SONY)		
D702	8-719-061-81	DIODE	TLYU1002 (TPX1, SONY)		
D703	8-719-064-05	DIODE	TLGU1002 (TPX1, SONY)		
D782	8-719-075-15	DIODE	MAZT082H08S0		
D783	8-719-075-15	DIODE	MAZT082H08S0		
D784	8-719-073-01	DIODE	MA111- (K8).S0		
D785	8-719-073-01	DIODE	MA111- (K8).S0		
D786	8-719-075-15	DIODE	MAZT082H08S0		
D787	8-719-075-15	DIODE	MAZT082H08S0		
D788	8-719-075-15	DIODE	MAZT082H08S0		
D789	8-719-075-15	DIODE	MAZT082H08S0		
D790	8-719-075-15	DIODE	MAZT082H08S0		
D853	8-719-073-01	DIODE	MA111- (K8).S0		
D854	8-719-062-44	DIODE	PG1112H-TR		
D902	8-713-102-80	DIODE	1T369-01-T8A		
D903	8-719-976-96	DIODE	MA8047-H-TX		
		< FERRITE BEAD >			
FB781	1-414-633-22	FERRITE	0uH		
FB782	1-414-633-22	FERRITE	0uH		
FB783	1-414-633-22	FERRITE	0uH		
FB784	1-414-633-22	FERRITE	0uH		
FB785	1-414-633-22	FERRITE	0uH		
FB786	1-414-633-22	FERRITE	0uH		
FB787	1-414-633-22	FERRITE	0uH		
FB788	1-414-228-11	FERRITE	0uH		

Ref. No.	Part No.	Description			Remark
FB789	1-500-284-21	FERRITE	0uH		
FB790	1-500-284-21	FERRITE	0uH		
FB791	1-469-324-21	FERRITE	0uH		
FB801	1-414-229-11	FERRITE	0uH		
FB802	1-414-229-11	FERRITE	0uH		
FB803	1-414-229-11	FERRITE	0uH		
		< IC >			
IC702	8-759-572-54	IC	TA6009FN (EL)		
IC801	8-759-364-05	IC	MB40D001PFV-G-BND-ER		
IC802	8-759-539-27	IC	IR3Y37A4		
IC803	8-759-196-97	IC	TC7SH32FU-TE85R		
IC851	8-759-521-35	IC	TL5001CDR		
IC852	8-759-710-82	IC	NJM2406F-TE2		
IC901	8-759-524-61	IC	CM7018L3-T4		
IC902	8-759-327-01	IC	NJM062V (TE2)		
		< JACK >			
J781	1-569-950-11	JACK (SMALL TYPE) (AV OUT)			
		< COIL >			
L702	1-469-527-91	INDUCTOR	47uH		
L801	1-469-528-91	INDUCTOR	100uH		
L802	1-469-525-91	INDUCTOR	10uH		
L851	1-469-524-91	INDUCTOR	4.7uH		
L852	1-424-674-11	INDUCTOR	22uH		
L853	1-419-387-21	INDUCTOR	100uH		
L901	1-469-525-91	INDUCTOR	10uH		
L902	1-469-525-91	INDUCTOR	10uH		
L903	1-469-525-91	INDUCTOR	10uH		
L904	1-469-525-91	INDUCTOR	10uH		
L905	1-412-949-21	INDUCTOR	6.8uH		
		< TRANSISTOR >			
Q851	8-729-042-72	TRANSISTOR	UN9214J- (K8).SO		
Q852	8-729-042-59	TRANSISTOR	UN9112J- (K8).SO		
Q853	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q854	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q855	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q856	8-729-823-84	TRANSISTOR	FP102-TL		
Q857	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q858	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q859	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q860	8-729-039-43	TRANSISTOR	FP216-TL		
Q861	8-729-042-59	TRANSISTOR	UN9112J- (K8).SO		
Q901	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q902	8-729-042-26	TRANSISTOR	2SB1462J-QR (K8).SO		
Q903	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q904	8-729-042-26	TRANSISTOR	2SB1462J-QR (K8).SO		
		< RESISTOR >			
R703	1-218-990-11	SHORT	0		
R708	1-218-951-11	RES-CHIP	680	5%	1/16W
R712	1-218-946-11	RES-CHIP	270	5%	1/16W
R713	1-208-912-11	METAL CHIP	11K	0.5%	1/16W
R714	1-218-951-11	RES-CHIP	680	5%	1/16W
R715	1-218-979-11	RES-CHIP	150K	5%	1/16W

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Ref. No.	Part No.	Description			Remark
R716	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R717	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R718	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R719	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R720	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R721	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R722	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R723	1-218-971-11	RES-CHIP	33K	5%	1/16W
R724	1-218-965-11	RES-CHIP	10K	5%	1/16W
R727	1-216-013-00	METAL CHIP	33	5%	1/10W
R782	1-218-953-11	RES-CHIP	1K	5%	1/16W
R787	1-218-953-11	RES-CHIP	1K	5%	1/16W
R808	1-218-969-11	RES-CHIP	22K	5%	1/16W
R809	1-218-966-11	RES-CHIP	12K	5%	1/16W
R810	1-218-990-11	SHORT	0		
R812	1-218-973-11	RES-CHIP	47K	5%	1/16W
R813	1-218-967-11	RES-CHIP	15K	5%	1/16W
R814	1-218-971-11	RES-CHIP	33K	5%	1/16W
R817	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R818	1-218-972-11	RES-CHIP	39K	5%	1/16W
R820	1-218-977-11	RES-CHIP	100K	5%	1/16W
R821	1-218-965-11	RES-CHIP	10K	5%	1/16W
R853	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R854	1-218-970-11	METAL CHIP	27K	0.5%	1/16W
R855	1-218-978-11	METAL CHIP	120K	0.5%	1/16W
R856	1-218-950-11	RES-CHIP	560	5%	1/16W
R857	1-218-969-11	RES-CHIP	22K	5%	1/16W
R858	1-218-950-11	RES-CHIP	560	5%	1/16W
R859	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R860	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R861	1-208-689-11	METAL CHIP	1.8K	0.5%	1/16W
R862	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W
R863	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R864	1-218-973-11	RES-CHIP	47K	5%	1/16W
R865	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R866	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R867	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R868	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R869	1-218-977-11	RES-CHIP	100K	5%	1/16W
R870	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R871	1-218-969-11	RES-CHIP	22K	5%	1/16W
R872	1-218-949-11	RES-CHIP	470	5%	1/16W
R873	1-218-942-11	RES-CHIP	120	5%	1/16W
R901	1-218-990-11	SHORT	0		
R902	1-218-990-11	SHORT	0		
R904	1-218-973-11	RES-CHIP	47K	5%	1/16W
R905	1-218-973-11	RES-CHIP	47K	5%	1/16W
R908	1-218-990-11	SHORT	0		
R911	1-218-978-11	RES-CHIP	120K	5%	1/16W
R912	1-218-987-11	RES-CHIP	680K	5%	1/16W
R913	1-218-976-11	RES-CHIP	82K	5%	1/16W
R916	1-218-965-11	RES-CHIP	10K	5%	1/16W
R919	1-218-989-11	RES-CHIP	1M	5%	1/16W
R920	1-218-969-11	RES-CHIP	22K	5%	1/16W
R921	1-218-975-11	RES-CHIP	68K	5%	1/16W
R922	1-218-975-11	RES-CHIP	68K	5%	1/16W
R923	1-218-973-11	RES-CHIP	47K	5%	1/16W
R925	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R927	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R928	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R929	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R931	1-218-990-11	SHORT	0		
R932	1-218-977-11	RES-CHIP	100K	5%	1/16W
R933	1-218-971-11	RES-CHIP	33K	5%	1/16W
R935	1-218-977-11	RES-CHIP	100K	5%	1/16W
R936	1-218-977-11	RES-CHIP	100K	5%	1/16W
R939	1-218-990-11	SHORT	0		
R940	1-218-990-11	SHORT	0		
R941	1-218-977-11	RES-CHIP	100K	5%	1/16W
R942	1-218-971-11	RES-CHIP	33K	5%	1/16W
R945	1-218-990-11	SHORT	0		
R948	1-218-990-11	SHORT	0		
R949	1-218-990-11	SHORT	0		
R950	1-218-990-11	SHORT	0		
R951	1-218-990-11	SHORT	0		
R953	1-218-990-11	SHORT	0		
R962	1-218-990-11	SHORT	0		
R963	1-218-990-11	SHORT	0		
R966	1-218-977-11	RES-CHIP	100K	5%	1/16W
R967	1-218-990-11	SHORT	0		
R970	1-218-990-11	SHORT	0		
R974	1-218-937-11	RES-CHIP	47	5%	1/16W
R975	1-218-937-11	RES-CHIP	47	5%	1/16W
R976	1-218-937-11	RES-CHIP	47	5%	1/16W
R977	1-218-973-11	RES-CHIP	47K	5%	1/16W
		< SWITCH >			
S701	1-786-039-21	SWITCH, TACTILE (CONTROL BUTTON)			
S702	1-771-138-82	SWITCH, KEY BOARD (DISPLAY)			
S703	1-572-467-21	SWITCH, PUSH (1 KEY) (POWER ON/OFF)			
S704	1-771-138-82	SWITCH, KEY BOARD (VOLUME (+))			
S705	1-771-138-82	SWITCH, KEY BOARD (FLASH)			
S706	1-771-138-82	SWITCH, KEY BOARD (VOLUME (-))			
S707	1-771-331-61	SWITCH, PUSH (1 KEY) (PLAY)			
S708	1-771-138-82	SWITCH, KEY BOARD (LCD ON/OFF)			
S709	1-771-331-81	SWITCH, PUSH (1 KEY) (MOVIE)			
		< SENSOR >			
SE701	1-801-868-41	SENSOR, SHOCK			
		< TRANSFORMER >			
⚠T851	1-435-227-11	TRANSFORMER, INVERTER			
	A-7074-797-A	PK-55 BOARD, COMPLETE (TYPE S)			
		**********			
		(Ref.No.: 2,000 Series)			
		< BATTERY >			
BT701	1-756-102-11	BATTERY, LITHIUM SECONDARY			
		< CAPACITOR >			
C705	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C706	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C710	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V

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PK-55 (TYPE S)

Ref. No.	Part No.	Description			Remark
C711	1-164-870-11	CERAMIC CHIP	68PF	5%	16V
C801	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C802	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C803	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C804	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C805	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C806	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C807	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C808	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C811	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C812	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C813	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C814	1-165-112-11	CERAMIC CHIP	0.33uF	20%	10V
C815	1-165-112-11	CERAMIC CHIP	0.33uF	20%	10V
C816	1-165-112-11	CERAMIC CHIP	0.33uF	20%	10V
C851	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C852	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C853	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C854	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C855	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C856	1-164-856-81	CERAMIC CHIP	18PF	5%	16V
C857	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C858	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C859	1-164-860-11	CERAMIC CHIP	27PF	5%	16V
C861	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C862	1-115-156-11	CERAMIC CHIP	1uF		10V
C863	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C864	1-164-657-11	CERAMIC CHIP	0.015uF	10%	50V
C865	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
⚠C866	1-131-959-91	CERAMIC CHIP	12PF	10%	3KV
C902	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V
C903	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C904	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C905	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C906	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C907	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C908	1-164-872-11	CERAMIC CHIP	82PF	5%	16V
C909	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C911	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C912	1-164-872-11	CERAMIC CHIP	82PF	5%	16V
C913	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C914	1-113-994-11	TANTAL. CHIP	6.8uF	20%	16V
C915	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C916	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C917	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C918	1-164-505-11	CERAMIC CHIP	2.2uF		16V
		< CONNECTOR >			
CN701	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P			
CN702	1-784-342-11	HOUSING, CONNECTOR 2P			
CN781	1-691-344-11	CONNECTOR, FFC/FPC (ZIF) 6P			
CN851	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN901	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P			
		< DIODE >			
D701	8-719-061-81	DIODE	TLYU1002 (TPX1, SONY)		
D702	8-719-061-81	DIODE	TLYU1002 (TPX1, SONY)		

Ref. No.	Part No.	Description		Remark
D703	8-719-064-05	DIODE	TLGU1002 (TPX1, SONY)	
D782	8-719-075-15	DIODE	MAZT082H08S0	
D783	8-719-075-15	DIODE	MAZT082H08S0	
D784	8-719-073-01	DIODE	MA111- (K8).S0	
D785	8-719-073-01	DIODE	MA111- (K8).S0	
D786	8-719-075-15	DIODE	MAZT082H08S0	
D787	8-719-075-15	DIODE	MAZT082H08S0	
D788	8-719-075-15	DIODE	MAZT082H08S0	
D789	8-719-075-15	DIODE	MAZT082H08S0	
D790	8-719-075-15	DIODE	MAZT082H08S0	
D853	8-719-073-01	DIODE	MA111- (K8).S0	
D854	8-719-062-44	DIODE	PG1112H-TR	
D902	8-713-102-80	DIODE	1T369-01-T8A	
D903	8-719-976-96	DIODE	MA8047-H-TX	
		< FERRITE BEAD >		
FB781	1-414-633-22	FERRITE	0uH	
FB782	1-414-633-22	FERRITE	0uH	
FB783	1-414-633-22	FERRITE	0uH	
FB784	1-414-633-22	FERRITE	0uH	
FB785	1-414-633-22	FERRITE	0uH	
FB786	1-414-633-22	FERRITE	0uH	
FB787	1-414-633-22	FERRITE	0uH	
FB788	1-414-228-11	FERRITE	0uH	
FB789	1-500-284-21	FERRITE	0uH	
FB790	1-500-284-21	FERRITE	0uH	
FB791	1-469-324-21	FERRITE	0uH	
FB801	1-414-229-11	FERRITE	0uH	
FB802	1-414-229-11	FERRITE	0uH	
FB803	1-414-229-11	FERRITE	0uH	
		< IC >		
IC702	8-759-572-54	IC	TA6009FN (EL)	
IC801	8-759-364-05	IC	MB40D001PFV-G-BND-ER	
IC802	8-759-539-27	IC	IR3Y37A4	
IC803	8-759-196-97	IC	TC7SH32FU-TE85R	
IC851	8-759-521-35	IC	TL5001CDR	
IC852	8-759-710-82	IC	NJM2406F-TE2	
IC901	8-759-587-61	IC	LZ9GH234	
IC902	8-759-327-01	IC	NJM062V (TE2)	
		< JACK >		
J781	1-569-950-11	JACK (SMALL TYPE) (AV OUT)		
		< COIL >		
L702	1-469-527-91	INDUCTOR	47uH	
L801	1-469-528-91	INDUCTOR	100uH	
L802	1-469-525-91	INDUCTOR	10uH	
L851	1-469-524-91	INDUCTOR	4.7uH	
L852	1-424-674-11	INDUCTOR	22uH	
L853	1-419-387-21	INDUCTOR	100uH	
L901	1-469-525-91	INDUCTOR	10uH	
L902	1-469-525-91	INDUCTOR	10uH	
L903	1-469-525-91	INDUCTOR	10uH	
L905	1-412-949-21	INDUCTOR	6.8uH	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q851	8-729-042-72	TRANSISTOR	UN9214J- (K8).SO		
Q852	8-729-042-59	TRANSISTOR	UN9112J- (K8).SO		
Q853	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q854	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q855	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q856	8-729-823-84	TRANSISTOR	FP102-TL		
Q857	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q858	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q859	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q860	8-729-039-43	TRANSISTOR	FP216-TL		
Q861	8-729-042-59	TRANSISTOR	UN9112J- (K8).SO		
Q901	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q902	8-729-042-26	TRANSISTOR	2SB1462J-QR (K8).SO		
Q903	8-729-037-52	TRANSISTOR	2SD2216J-QR (K8).SO		
Q904	8-729-042-26	TRANSISTOR	2SB1462J-QR (K8).SO		
		< RESISTOR >			
R703	1-218-990-11	SHORT	0		
R708	1-218-951-11	RES-CHIP	680	5%	1/16W
R712	1-218-946-11	RES-CHIP	270	5%	1/16W
R713	1-208-912-11	METAL CHIP	11K	0.5%	1/16W
R714	1-218-951-11	RES-CHIP	680	5%	1/16W
R715	1-218-979-11	RES-CHIP	150K	5%	1/16W
R716	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R717	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R718	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R719	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R720	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R721	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R722	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R723	1-218-971-11	RES-CHIP	33K	5%	1/16W
R724	1-218-965-11	RES-CHIP	10K	5%	1/16W
R727	1-216-013-00	METAL CHIP	33	5%	1/10W
R782	1-218-953-11	RES-CHIP	1K	5%	1/16W
R787	1-218-953-11	RES-CHIP	1K	5%	1/16W
R808	1-218-969-11	RES-CHIP	22K	5%	1/16W
R809	1-218-966-11	RES-CHIP	12K	5%	1/16W
R810	1-218-990-11	SHORT	0		
R812	1-218-973-11	RES-CHIP	47K	5%	1/16W
R813	1-218-967-11	RES-CHIP	15K	5%	1/16W
R814	1-218-971-11	RES-CHIP	33K	5%	1/16W
R817	1-218-966-11	RES-CHIP	12K	5%	1/16W
R818	1-218-972-11	RES-CHIP	39K	5%	1/16W
R820	1-218-977-11	RES-CHIP	100K	5%	1/16W
R821	1-218-965-11	RES-CHIP	10K	5%	1/16W
R853	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R854	1-218-970-11	METAL CHIP	27K	0.5%	1/16W
R855	1-218-978-11	METAL CHIP	120K	0.5%	1/16W
R856	1-218-950-11	RES-CHIP	560	5%	1/16W
R857	1-218-969-11	RES-CHIP	22K	5%	1/16W
R858	1-218-950-11	RES-CHIP	560	5%	1/16W
R859	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R860	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R861	1-208-689-11	METAL CHIP	1.8K	0.5%	1/16W
R862	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W
R863	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R864	1-218-973-11	RES-CHIP	47K	5%	1/16W
R865	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R866	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R867	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R868	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R869	1-218-977-11	RES-CHIP	100K	5%	1/16W
R870	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R871	1-218-969-11	RES-CHIP	22K	5%	1/16W
R872	1-218-949-11	RES-CHIP	470	5%	1/16W
R873	1-218-942-11	RES-CHIP	120	5%	1/16W
R903	1-218-990-11	SHORT	0		
R904	1-218-973-11	RES-CHIP	47K	5%	1/16W
R905	1-218-973-11	RES-CHIP	47K	5%	1/16W
R911	1-218-978-11	RES-CHIP	120K	5%	1/16W
R912	1-218-987-11	RES-CHIP	680K	5%	1/16W
R913	1-218-977-11	RES-CHIP	100K	5%	1/16W
R916	1-218-965-11	RES-CHIP	10K	5%	1/16W
R917	1-218-989-11	RES-CHIP	1M	5%	1/16W
R919	1-218-989-11	RES-CHIP	1M	5%	1/16W
R920	1-218-969-11	RES-CHIP	22K	5%	1/16W
R921	1-218-975-11	RES-CHIP	68K	5%	1/16W
R922	1-218-975-11	RES-CHIP	68K	5%	1/16W
R923	1-218-973-11	RES-CHIP	47K	5%	1/16W
R925	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R927	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R928	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R929	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R932	1-218-977-11	RES-CHIP	100K	5%	1/16W
R933	1-218-971-11	RES-CHIP	33K	5%	1/16W
R934	1-218-990-11	SHORT	0		
R935	1-218-977-11	RES-CHIP	100K	5%	1/16W
R936	1-218-977-11	RES-CHIP	100K	5%	1/16W
R941	1-218-977-11	RES-CHIP	100K	5%	1/16W
R942	1-218-971-11	RES-CHIP	33K	5%	1/16W
R944	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R945	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R946	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R947	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R952	1-218-990-11	SHORT	0		
R954	1-218-990-11	SHORT	0		
R956	1-218-990-11	SHORT	0		
R957	1-218-990-11	SHORT	0		
R958	1-218-990-11	SHORT	0		
R959	1-218-990-11	SHORT	0		
R960	1-218-990-11	SHORT	0		
R961	1-218-990-11	SHORT	0		
R964	1-218-990-11	SHORT	0		
R968	1-218-990-11	SHORT	0		
R969	1-218-990-11	SHORT	0		
R971	1-218-937-11	RES-CHIP	47	5%	1/16W
R972	1-218-937-11	RES-CHIP	47	5%	1/16W
R973	1-218-937-11	RES-CHIP	47	5%	1/16W
R977	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
		< SWITCH >			
S701	1-786-039-21	SWITCH, TACTILE (CONTROL BUTTON)			
S702	1-771-138-82	SWITCH, KEY BOARD (DISPLAY)			
S703	1-572-467-21	SWITCH, PUSH (1 KEY) (POWER ON/OFF)			
S704	1-771-138-82	SWITCH, KEY BOARD (VOLUME (+))			
S705	1-771-138-82	SWITCH, KEY BOARD (FLASH)			
S706	1-771-138-82	SWITCH, KEY BOARD (VOLUME (-))			
S707	1-771-331-61	SWITCH, PUSH (1 KEY) (PLAY)			
S708	1-771-138-82	SWITCH, KEY BOARD (LCD ON/OFF)			

Ref. No.	Part No.	Description			Remark
S709	1-771-331-81	SWITCH, PUSH (1 KEY) (MOVIE)			
		< SENSOR >			
SE701	1-801-868-41	SENSOR, SHOCK			
		< TRANSFORMER >			
⚠T851	1-435-227-11	TRANSFORMER, INVERTER			
	A-7074-453-A	VF-143 BOARD, COMPLETE			
		**********			
		(Ref.No.: 2,000 Series)			
		< CAPACITOR >			
C501	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C502	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C503	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C504	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C505	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C506	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C507	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C508	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C510	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C511	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C512	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C513	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C514	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C515	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C516	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C517	1-104-915-11	TANTAL. CHIP	2.2uF	20%	20V
C518	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C519	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C520	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C521	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C601	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C602	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C603	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C605	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V
C606	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	16V
C608	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C609	1-109-935-11	TANTAL. CHIP	4.7uF	20%	6.3V
C610	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C611	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C612	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C613	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C614	1-164-878-11	CERAMIC CHIP	150PF	5%	16V
C615	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C616	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C617	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C618	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C619	1-164-874-11	CERAMIC CHIP	100PF	5%	16V
C620	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C621	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C622	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C623	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C624	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C625	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C626	1-113-642-11	TANTAL. CHIP	47uF	20%	10V
C628	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C629	1-164-505-11	CERAMIC CHIP	2.2uF		16V
⚠C630	1-115-464-91	CERAMIC CHIP	0.0022uF	10%	630V
		< CONNECTOR >			
CN501	1-784-421-11	CONNECTOR, FFC/FPC (ZIF) 27P			
CN601	1-750-340-21	CONNECTOR, FFC/EPC (ZIF) 16P			
		< DIODE >			
D501	8-719-060-95	DIODE CL-200IR-X-TSL-BCD (EYE SENSOR LED)			
D601	8-719-043-70	DIODE MA6S121- (TX)			
D602	8-713-102-80	DIODE 1T369-01-T8A			
D603	8-719-033-14	DIODE CL-170PG-CD-T			
D604	8-719-056-49	DIODE 1SS370 (TE85L)			
		< IC >			
IC502	8-759-546-65	IC CXA8115AR-T4			
IC503	8-759-364-05	IC M62376GP-65AD			
IC504	8-759-075-66	IC TA75S01F (TE85R)			
IC601	8-759-097-75	IC MB3789PFV-G-BND-ER			
IC602	8-759-198-34	IC TA75S558F (TE85R)			
IC603	8-752-392-33	IC CXD2458AR-T4			
IC604	8-759-242-78	IC TC7W02FU (TE12R)			
		< COIL >			
L501	1-414-771-91	INDUCTOR	10uH		
L502	1-414-771-91	INDUCTOR	10uH		
L503	1-414-755-11	INDUCTOR	22uH		
L504	1-414-771-91	INDUCTOR	10uH		
L601	1-412-033-11	INDUCTOR CHIP	220uH		
L602	1-414-756-11	INDUCTOR	47uH		
L603	1-412-946-11	INDUCTOR	3.9uH		
L604	1-412-031-11	INDUCTOR CHIP	47uH		
L605	1-412-029-11	INDUCTOR CHIP	10uH		
		< FLUORESCENT INDICATOR >			
⚠ND601	1-517-933-11	FLUORESCENT TUBE (0.44)			
		< TRANSISTOR >			
Q501	8-729-040-26	TRANSISTOR	CPT-182S-C-TSL-BCD (EYE SENSOR)		
Q502	8-729-049-25	TRANSISTOR	2SC5376F-B (TPL3)		
Q503	8-729-822-05	TRANSISTOR	2SD1622-ST-TD		
Q601	8-729-013-72	TRANSISTOR	RN2105-TE85L		
Q602	8-729-037-61	TRANSISTOR	UN9113J- (K8).SO		
Q603	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO		
Q604	8-729-427-72	TRANSISTOR	XP4501-TXE		
Q605	8-729-039-24	TRANSISTOR	FX216-TL1		
		< RESISTOR >			
R501	1-218-969-11	RES-CHIP	22K	5%	1/16W
R502	1-218-969-11	RES-CHIP	22K	5%	1/16W
R503	1-216-150-91	RES-CHIP	10	5%	1/8W
R504	1-218-987-11	RES-CHIP	680K	5%	1/16W
R505	1-216-019-00	METAL CHIP	56	5%	1/10W

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Ref. No.	Part No.	Description			Remark
R507	1-218-969-11	RES-CHIP	22K	5%	1/16W
R508	1-218-971-11	RES-CHIP	33K	5%	1/16W
R510	1-218-990-11	SHORT	0		
R513	1-218-975-11	RES-CHIP	68K	5%	1/16W
R514	1-218-971-11	RES-CHIP	33K	5%	1/16W
R516	1-218-972-11	RES-CHIP	39K	5%	1/16W
R517	1-218-972-11	RES-CHIP	39K	5%	1/16W
R518	1-218-975-11	RES-CHIP	68K	5%	1/16W
R519	1-218-971-11	RES-CHIP	33K	5%	1/16W
R520	1-218-973-11	RES-CHIP	47K	5%	1/16W
R521	1-218-972-11	RES-CHIP	39K	5%	1/16W
R522	1-216-857-11	METAL CHIP	1M	5%	1/16W
R523	1-218-941-11	RES-CHIP	100	5%	1/16W
R524	1-218-941-11	RES-CHIP	100	5%	1/16W
R526	1-218-941-11	RES-CHIP	100	5%	1/16W
R530	1-218-972-11	RES-CHIP	39K	5%	1/16W
R531	1-218-990-11	SHORT	0		
R532	1-218-990-11	SHORT	0		
R533	1-218-968-11	RES-CHIP	18K	5%	1/16W
R534	1-218-969-11	RES-CHIP	22K	5%	1/16W
R601	1-218-975-11	RES-CHIP	68K	5%	1/16W
R602	1-208-941-11	METAL CHIP	180K	0.5%	1/16W
R603	1-218-974-11	RES-CHIP	56K	5%	1/16W
R604	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R605	1-218-975-11	RES-CHIP	68K	5%	1/16W
R606	1-218-982-11	RES-CHIP	270K	5%	1/16W
R607	1-218-973-11	RES-CHIP	47K	5%	1/16W
R608	1-218-974-11	RES-CHIP	56K	5%	1/16W
R609	1-218-965-11	RES-CHIP	10K	5%	1/16W
R610	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R611	1-218-969-11	RES-CHIP	22K	5%	1/16W
R612	1-218-983-11	RES-CHIP	330K	5%	1/16W
R613	1-218-980-11	RES-CHIP	180K	5%	1/16W
R614	1-218-985-11	RES-CHIP	470K	5%	1/16W
R615	1-218-970-11	RES-CHIP	27K	5%	1/16W
R616	1-218-979-11	RES-CHIP	150K	5%	1/16W
R617	1-218-982-11	RES-CHIP	270K	5%	1/16W
R618	1-218-971-11	RES-CHIP	33K	5%	1/16W
R620	1-218-989-11	RES-CHIP	1M	5%	1/16W
R621	1-218-965-11	RES-CHIP	10K	5%	1/16W
R622	1-218-974-11	RES-CHIP	56K	5%	1/16W
R623	1-218-973-11	RES-CHIP	47K	5%	1/16W
R624	1-218-971-11	RES-CHIP	33K	5%	1/16W
R625	1-218-977-11	RES-CHIP	100K	5%	1/16W
R626	1-218-965-11	RES-CHIP	10K	5%	1/16W
R627	1-218-953-11	RES-CHIP	1K	5%	1/16W
R628	1-218-953-11	RES-CHIP	1K	5%	1/16W
R629	1-218-949-11	RES-CHIP	470	5%	1/16W
R630	1-218-969-11	RES-CHIP	22K	5%	1/16W
R636	1-216-839-11	METAL CHIP	33K	5%	1/16W
R637	1-216-809-11	METAL CHIP	100	5%	1/16W
R638	1-218-990-11	SHORT	0		
		< TRANSFORMER >			
⚠T601	1-435-225-21	TRANSFORMER, INVERTER			

Ref. No.	Part No.	Description			Remark
	A-7074-793-A	VP-55 BOARD, COMPLETE			
		**********			
		(Ref.No.: 2,000 Series)			
		< CAPACITOR >			
C201	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C202	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C203	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C204	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C205	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C206	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C207	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C208	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C209	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C210	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C211	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C213	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C214	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C215	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C224	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C225	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C226	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C227	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C228	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C229	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C230	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C231	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C232	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C233	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C234	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C235	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C236	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C237	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C238	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
CN231	1-766-343-21	CONNECTOR, FFC/FPC 13P			
CN232	1-766-337-21	CONNECTOR, FFC/FPC 7P			
CN234	1-766-336-21	CONNECTOR, FFC/FPC 6P			
CN235	1-766-335-21	CONNECTOR, FFC/FPC 5P			
CN236	1-766-346-21	CONNECTOR, FFC/FPC 16P			
		< DIODE >			
D201	8-719-075-15	DIODE MAZT082H08S0			
		< FERRITE BEAD >			
FB201	1-414-228-11	FERRITE	0uH		
FB260	1-414-228-11	FERRITE	0uH		
FB261	1-414-228-11	FERRITE	0uH		
FB262	1-414-228-11	FERRITE	0uH		
FB263	1-414-228-11	FERRITE	0uH		
FB264	1-414-228-11	FERRITE	0uH		
		< IC >			
IC201	8-759-359-49	IC NJM3414AV (TE2)			
IC202	8-759-359-49	IC NJM3414AV (TE2)			
IC203	8-759-823-51	IC LB1830M-TLM			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
IC204	8-759-444-87	IC NJM324V (TE2)				
IC205	8-759-058-45	IC NJM3403AV (TE2)				
IC206	8-759-478-92	IC TC7SET04FU (TE85R)				
IC207	8-759-478-92	IC TC7SET04FU (TE85R)				
IC208	8-759-248-78	IC MB88102PFV-G-BND-ER				
IC209	8-752-900-84	IC CXP81120-047R-T6				
IC210	8-759-058-58	IC TC7S04FU (TE85R)				
		< COIL >				
L201	1-412-951-11	INDUCTOR	10uH			
L202	1-412-951-11	INDUCTOR	10uH			
L204	1-412-963-11	INDUCTOR	100uH			
L205	1-412-951-11	INDUCTOR	10uH			
L206	1-412-951-11	INDUCTOR	10uH			
L207	1-412-951-11	INDUCTOR	10uH			
		< TRANSISTOR >				
Q201	8-729-042-26	TRANSISTOR	2SB1462J-QR (K8).SO			
Q202	8-729-042-26	TRANSISTOR	2SB1462J-QR (K8).SO			
Q203	8-729-042-26	TRANSISTOR	2SB1462J-QR (K8).SO			
Q204	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO			
Q205	8-729-420-24	TRANSISTOR	2SB1218A-QRS-TX			
Q206	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO			
Q207	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO			
Q208	8-729-013-31	TRANSISTOR	2SA1588-OY-TE85L			
Q209	8-729-420-24	TRANSISTOR	2SB1218A-QRS-TX			
Q210	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO			
Q211	8-729-037-74	TRANSISTOR	UN9213J- (K8).SO			
		< RESISTOR >				
R201	1-208-683-11	METAL CHIP	1K	0.5%	1/16W	
R202	1-218-953-11	RES-CHIP	1K	5%	1/16W	
R203	1-208-683-11	METAL CHIP	1K	0.5%	1/16W	
R204	1-208-683-11	METAL CHIP	1K	0.5%	1/16W	
R205	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	
R206	1-218-977-11	RES-CHIP	100K	5%	1/16W	
R207	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	
R209	1-208-683-11	METAL CHIP	1K	0.5%	1/16W	
R210	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	
R211	1-218-967-11	RES-CHIP	15K	5%	1/16W	
R212	1-218-965-11	RES-CHIP	10K	5%	1/16W	
R213	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W	
R214	1-218-977-11	RES-CHIP	100K	5%	1/16W	
R215	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	
R216	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	
R217	1-218-967-11	RES-CHIP	15K	5%	1/16W	
R218	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W	
R219	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R220	1-218-977-11	RES-CHIP	100K	5%	1/16W	
R221	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R222	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R223	1-218-965-11	RES-CHIP	10K	5%	1/16W	
R224	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R225	1-218-990-11	SHORT	0			
R227	1-208-927-11	METAL CHIP	47K	0.5%	1/16W	
R228	1-208-927-11	METAL CHIP	47K	0.5%	1/16W	
R231	1-208-943-11	METAL CHIP	220K	0.5%	1/16W	

Ref. No.	Part No.	Description				Remark
R232	1-208-943-11	METAL CHIP	220K	0.5%	1/16W	
R233	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	
R234	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	
R235	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	
R238	1-218-969-11	RES-CHIP	22K	5%	1/16W	
R239	1-218-969-11	RES-CHIP	22K	5%	1/16W	
R240	1-218-969-11	RES-CHIP	22K	5%	1/16W	
R241	1-218-969-11	RES-CHIP	22K	5%	1/16W	
R242	1-218-969-11	RES-CHIP	22K	5%	1/16W	
R243	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	
R244	1-218-969-11	RES-CHIP	22K	5%	1/16W	
R245	1-218-965-11	RES-CHIP	10K	5%	1/16W	
R246	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R247	1-218-969-11	RES-CHIP	22K	5%	1/16W	
R248	1-218-965-11	RES-CHIP	10K	5%	1/16W	
R249	1-218-953-11	RES-CHIP	1K	5%	1/16W	
R250	1-218-965-11	RES-CHIP	10K	5%	1/16W	
R251	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R252	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R253	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R254	1-218-946-11	RES-CHIP	270	5%	1/16W	
R255	1-218-989-11	RES-CHIP	1M	5%	1/16W	
R256	1-218-973-11	RES-CHIP	47K	5%	1/16W	
R257	1-218-953-11	RES-CHIP	1K	5%	1/16W	
R258	1-218-990-11	SHORT	0			
R259	1-218-990-11	SHORT	0			
		< VIBRATOR >				
X201	1-579-553-11	VIBRATOR (12MHz)				

ACCESSORIES

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⚠	1-475-599-11	ADAPTOR, AC (AC-L10) (EXCEPT KR)
⚠	1-475-599-71	ADAPTOR, AC (AC-L10) (KR)
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (E)
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (E)
⚠	1-696-819-11	CORD, POWER (AUS)
	1-757-293-11	CORD, CONNECTION (USB 5P)
⚠	1-769-608-11	CORD, POWER (AEP, E)
⚠	1-776-985-11	CORD, POWER (KR)
⚠	1-783-374-11	CORD, POWER (UK, HK)
	1-783-738-11	CORD, CONNECTION (AV CONNECTING 1.5m)
⚠	1-790-107-22	CORD, POWER (US, CND)
⚠	1-790-732-11	CORD, POWER (J)
	3-065-665-01	MANUAL, INSTRUCTION (for SAFETY) (JAPANESE) (J)
	3-066-676-01	SPVD-004 (P) (CD-ROM) (AEP, UK, E, HK, AUS, KR)
	3-066-677-01	SPVD-004 (I) (CD-ROM) (US, CND, J)
	3-066-743-01	MANUAL, INSTRUCTION (JAPANESE) (J)
	3-066-743-11	MANUAL, INSTRUCTION (ENGLISH) (US, CND, AEP, UK, E, HK, AUS)
	3-066-743-21	MANUAL, INSTRUCTION (FRENCH, GERMAN) (CND, AEP)
	3-066-743-31	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE) (AEP, E)
	3-066-743-41	MANUAL, INSTRUCTION (ITALIAN, DUTCH) (AEP)

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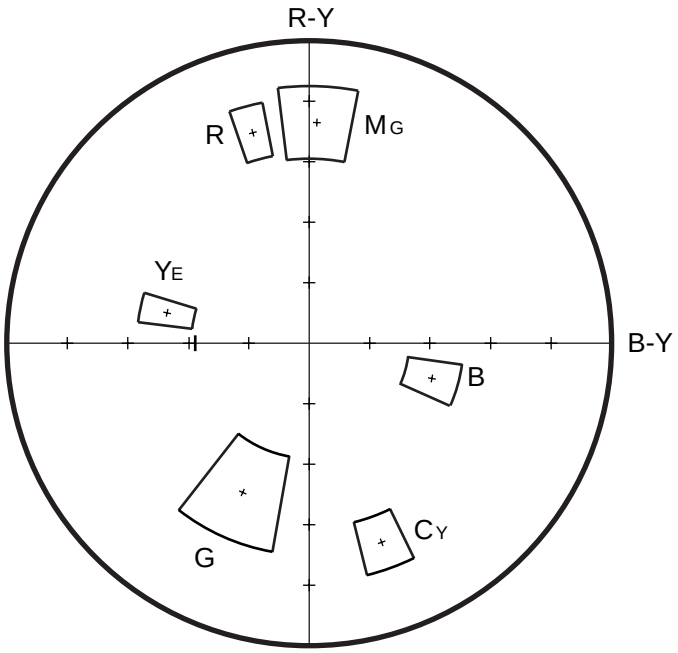
Ref. No.	Part No.	Description	Remark
	3-066-743-51	MANUAL, INSTRUCTION (TRADITIONAL CHINESE, SIMPLIFIED CHINESE) (E, HK)	
	3-066-743-61	MANUAL, INSTRUCTION (SWEDISH, RUSSIAN) (AEP)	
	3-066-743-71	MANUAL, INSTRUCTION (ARABIC) (E)	
	3-066-743-81	MANUAL, INSTRUCTION (KOREAN) (KR)	
	3-067-797-11	STRING (T), CAP	
	3-987-015-01	BELT (S), SHOULDER	
	A-7094-140-A	BATTERY PACK (NP-330) (US, CND)	
	A-7094-141-B	BATTERY PACK (NP-330) (AEP, UK, E, HK, AUS, KR)	
	X-3950-691-1	CAP ASSY, LENS	

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

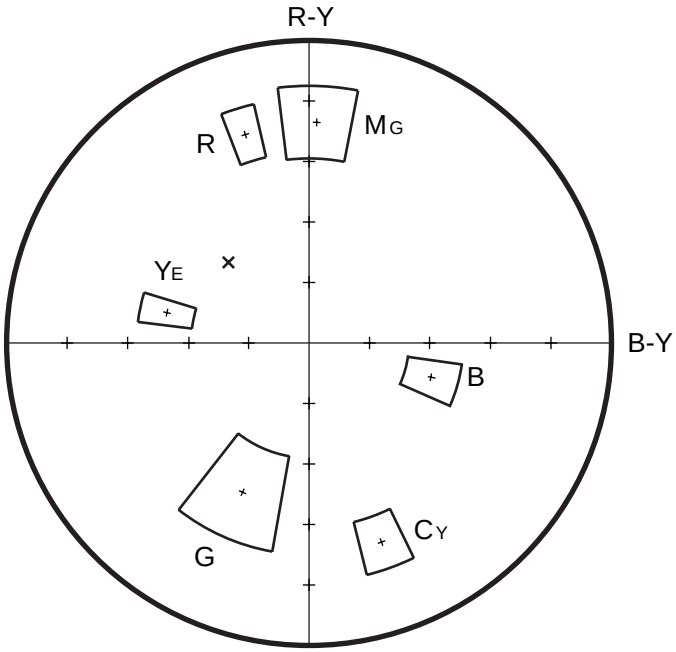
Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

For NTSC mode



MVC-FD97

For PAL mode



MVC-FD97

2001F0500-1
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Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2001.03	Official Release	—	—
1.1	2001.06	Correction	S.M. correction: Page 5-28	Yes